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JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

CONTENTS

Frontispiece and Sketch—A record of years and work in and for the American Pharmaceutical Association . . 253
Editorial:
Association Membership a Privilege, Duty and Obligation . . 255
Proposed National Institute of Drug Research—Stewart . . 256
Chemistry's Opportunity in Pharmaceutical Research—Beal . . 260
The Tack in the Tire—Scoville . . 267
Ballota Hirsuta, Benth—Ewing and Clevenger . . 273
The Cultivation of Medicinal Plants—Koch . . 275
The Preparation of Phenylcinchoninic Acid—Davy . . 281
The Manufacture of Acetphenetidin—Konantz . . 284
The American Red Cross Pharmacy in Paris—Burroughs . . 291
Ebert-Hallberg-Oldberg—Whelpley . . 297
Women's Section of the American Pharmaceutical Association . . 305
Proceedings of the Local Branches . . 332
Council Business—Letter No. 13 . . 339
Correspondence . . 340
Editorial Notes:
The Possibilities and Opportunities of American Pharmaceutical Association Branches . . 343
Inconsistencies in Legislation and Promulgation of Regulations . . 343
The Effect of the Discontinuance of the Sale of Alcoholic Beverages on Illegal Drug Traffic . . 344
The Question of Military Rank . . 344
Drug Research Plan Discussed in England . . 345
Acacia Added to Salt Solution to Give Greater Viscosity . . 345
Obituary . . 345
Societies and Colleges . . 346
The Pharmacist and the Law . . 348
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THE SIXTY-SEVENTH ANNUAL CONVENTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN NEW YORK CITY, DURING THE WEEK BEGINNING AUGUST 25, 1919.

The American Conference of Pharmaceutical Faculties and the National Association of Boards of Pharmacy will meet in New York City, August 25 and 26, and in joint session with Section on Education and Legislation A. Ph. A.
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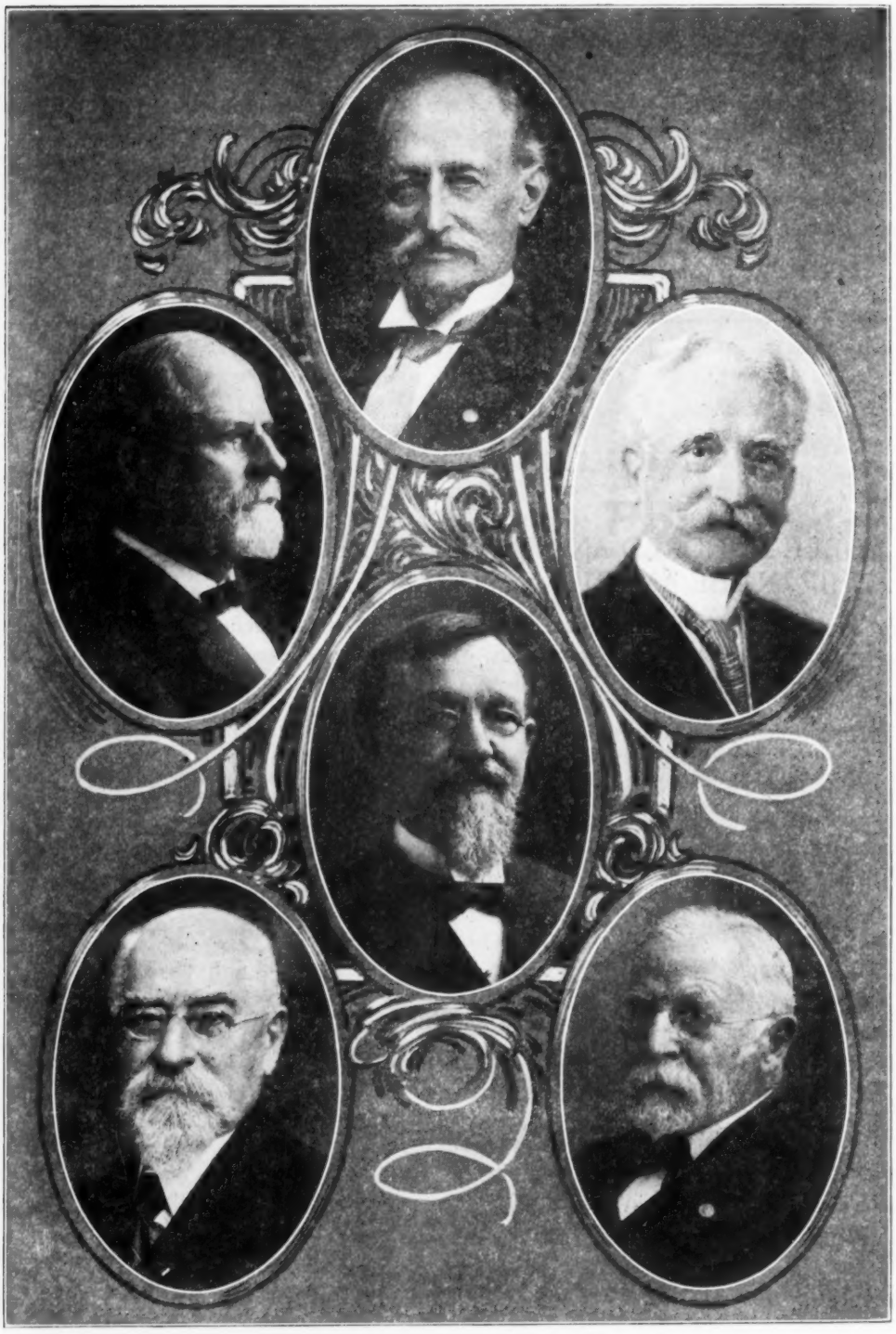
THREE HUNDRED AND TWENTY-FOUR YEARS OF MEMBERSHIP IN THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Joseph L. Lemberger, Lebanon, Pa., 61 years; the other members are all of Philadelphia: Alfred Mellor, 55 years; Richard M. Shoemaker, 54 years; Edwin M. Boring, 52 years; and Adolph W. Miller and Charles A. Weidemann, each 51 years.

"It is expedient to have an acquaintance with those who have looked into the world; who know men, understand business, and can give you good intelligence and good advice * * "

"If wrinkles must be written upon our brows, let them not be written upon the heart. The spirit should not grow old."



Pennsylvania Pharmacists who have been members of the American Pharmaceutical Association for more than a half century: Top, Joseph L. Lemberger, Lebanon, 1858; left, second row, Alfred Mellor, Philadelphia, 1855; right, Richard M. Shoemaker, Philadelphia, 1865; center, Edwin M. Boring, Philadelphia, 1867; left bottom row, Dr. Adolph W. Miller, Philadelphia, 1868; right, Dr. Charles A. Weidemann, Philadelphia, 1868.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. VIII APRIL, 1919 NO. 4

A RECORD OF YEARS AND WORK IN AND FOR THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Few associations include within their present membership such a large percentage of affiliates who have continuously exhibited their attachment to the purposes of the organization, as the American Pharmaceutical Association. It speaks for the worthy objects of the Association; the devotion to them by the members offers the very best argument why non-associated pharmacists should affiliate, and such attachment by men who have made good in their respective activities emphasizes the importance of pharmacy. These examples have made it possible to have pictures of half-century members in the issues of the JOURNAL for the past few years, and, in this number, those of six veteran pharmacists of one State, certainly a record the Association may well be proud of.

It is not the purpose, at this time, to present sketches of these faithfuls of the American Pharmaceutical Association; these have been written in the JOURNAL, in the State association records, in the College transactions or in the reports of bodies wherein their activities were for the time more directly concerned. The comments will be brief, and are abstracted from letters which came with the photographs. All of them have been honored by their Alma Mater, the Philadelphia College of Pharmacy, and most of them have during many years exhibited an active interest in this institution. Three of the men devoted nearly all of their years to the retail drug business, while the others engaged in wholesaling and manufacturing.

Joseph L. Lemberger is the dean of the American Pharmaceutical Association. A sketch appeared in Vol. VI, JOURNAL A. PH. A., p. 771. He became a member in 1858, and was president of the American Pharmaceutical Association in 1905. These references will answer the purpose of extended statements relating to him.

Alfred Mellor joined the Association in 1864, and while he did not participate actively in its proceedings, he writes: "I have always valued highly my membership and the personal touch with its members." The latter will remember his connection with the firm of Mellor & Rittenhouse, for many years extensively engaged in the manufacture of extract of licorice. He comments further that there are few left of those who were members when he affiliated.

Richard M. Shoemaker became a member of the American Pharmaceutical Association in 1865. He is the senior partner of Robert Shoemaker & Co., one

of the oldest wholesale drug firms, continuing under same name, in the United States. He was the first treasurer of the Alumni Association of the Philadelphia College of Pharmacy, and until 1909 took an active interest in the A. Ph. A., as a local chairman of the Committee on Membership.

Edwin M. Boring, though in his eightieth year, has only recently retired from the retail drug business. His affiliation with the American Pharmaceutical Association dates back to the New York meeting of 1867, when John Milhau was president of the Association. He contributes his picture "as an evidence of a tendency to active old age in the drug business if combined with a reasonable amount of outdoor work, and recreation, which can be obtained by the meetings of our Association; without my membership and the proceedings for over fifty years there would have been a void which could not have been filled by any other means." The firm of which Mr. Boring was a member, and then successor, was that of E. B. Garrigues & Co., at Tenth Street and Fairmount Avenue. He is now, and has been for many years, one of the board of trustees of the Philadelphia College of Pharmacy.

Adolph W. Miller is a graduate in pharmacy and also an alumnus of the Medical Department of the University of Pennsylvania. His activities have been, and still are, in the firm of Aschenbach & Miller. "The number of those who have held membership in the parent pharmaceutical association for more than fifty years demonstrates," he says, "that the profession of pharmacy is not insalubrious, that in order to lengthen his span of days every pharmacist should at once join the American Pharmaceutical Association, and that he should faithfully attend the annual conventions, as well as the monthly meetings of the local branches, not only for their scientific and their social features, but also as hygienic measures, so as to infuse new life and happiness into his ordinary *modus vivendi*." Dr. Miller follows the lines indicated by him; he is seldom absent from local, state and national pharmaceutical association meetings, and finds time for other conventions and meetings devoted to science and culture.

Charles A. Weidemann, like the subject of the preceding sketch, graduated in both pharmacy and medicine, and in the same institutions; he also joined the American Pharmaceutical Association during the same year. Prior to graduation he had experience both in the wholesale and retail drug business, and during the Civil War in hospital service. After graduation, in 1867, he established a retail drug store at 22nd and Green Sts., and remained in the business until 1902, since which time he has continued in the practice of medicine. He is a member of the board of trustees of the Philadelphia College of Pharmacy, and since 1900 recording secretary. He has been a member of the Pennsylvania Pharmaceutical Association since its organization in 1878.

The unselfish devotion of these members to the cause of pharmacy makes it unnecessary to measure lines and number words; the purpose of the writing is to mark mile-stones in the history of these individuals and the American Pharmaceutical Association, while adding a slight tribute to those of others which have heretofore been worthily and fittingly bestowed upon them during their years of activity and association.

E. G. E.

EDITORIAL

E. G. EBERLE, Editor 253 Bourse Bldg., PHILADELPHIA

ASSOCIATION MEMBERSHIP A PRIVILEGE, DUTY AND OBLIGATION.

THE keynote of progress is coöperation; the greater the endeavor and the closer the coöperation the greater the progress. The successes of individuals, the accomplishments of professions, are due to coöperative efforts; many are entitled to credit for the achievements of the individuals who are obligated to others for the work they have been able to do. Looking back into the history of the American Pharmaceutical Association, we find the records of work done by many pharmacists who unselfishly gave of their time and means so that present-day pharmacists might benefit. This is true of those who comprise the membership now, and every druggist of the country profits directly or indirectly by their work; many of them fail to discern their reciprocal obligations. It is like the unearned increment in taxation; the right of inheritance is in a degree a species of graft. Neither the heir to a fortune, who spends his time concerned only for himself, nor the one who inherits property and leaves it to increase in value, through the enterprise and industry of others, while he sojourns abroad, earn anything. So it is in professions; the large number are either confident that there are zealous workers for and contributors to progress in the results of whose work they can share, without cost or worry, or they have failed to justly appraise their obligations to their respective professions. Our development is dependent on borrowed capital of suggested ideas, motives and desires; we should recognize our responsibilities to that capital, as co-workers, both in receiving and giving. The lessons of the last few years should bring about a change in the attitude of individuals relative to their responsibilities; the application of right principles is essential to effect right relations.

Association membership gives pharmacists a higher appreciation of their profession and also of those likewise engaged, and of those in related work—an inspiration to promote pharmacy and contend for its rightful recognition. We have both individual and collective responsibilities,—now as never before should the spirit of the Golden Rule be generally applied.

Aside from the duty of coöperation, membership in the American Pharmaceutical Association is really a profitable investment,—the Year Book and the Journal are of greater value than represented by the five dollars in annual dues paid by the members. Instead of the Association membership being three thousand it should include ten thousand or more pharmacists. E. G. E.

PROPOSED NATIONAL INSTITUTE OF DRUG RESEARCH.

BY F. E. STEWART.

A National Institute of Drug Research is proposed by the American Chemical Society. This project originated in a conversation between Dr. Charles H. Herty, then chairman of the N. Y. branch of the American Chemical Society, and editor of the *Journal of Industrial and Engineering Chemistry*, and a "well known organic chemist, one who has been particularly successful in working out methods for the manufacture of certain much-needed coal-tar medicinals." This is a statement made in an editorial appearing in that journal, September, 1918, entitled, "War Chemistry in the Alleviation of Suffering." As the editorial in question clearly states, the object of the proposed institute in its conception, I am quoting from it as an important part of the history of the project.

In conversing with his friend, the editor asked the following question: "Suppose, during your researches, you made some new compound which you believed would prove more efficacious against certain diseases than any of the known compounds whose details of manufacture you have solved, where would you turn to have it tested thoroughly?" He replied: "I don't know."

In commenting upon this reply, the editor says:

"The negative answer was not surprising, rather it was confirmatory. It is a peculiar situation that exists in this country to-day. The three great commercial applications of the so-called 'coal-tar chemicals' are, first, explosives, for which means are never lacking for the through testing of new products; second, dye-stuffs, for which, fortunately, the equipment for testing as to standard, fastness, durability and aesthetic suitability is simple, inexpensive and accessible to every worker; third, medicinals, and here the problems of investigation become much more complex and the responsibility even greater. Rarely does the chemist possess the technique for their testing; he must rely upon the pharmacologist and the physiologist to determine the therapeutic value of his product.

"In university circles there is often lacking that spirit of coöperation between the several classes of research workers which would insure a thorough examination of these new products of the organic chemical laboratory, or, if the spirit be willing, the means for conducting the tests are too limited, especially now when university finances are so severely contracted. In a few manufacturing establishments provision is made for animal experimentation, but these facilities are entirely inadequate and not available to all organic chemists. In government laboratories some provision is made for this work, but restrictions are enforced by inadequate appropriations. And still people suffer, though much suffering has been alleviated by discoveries made in other lands.

"Fortunately, through the generous provision of wealthy individuals, certain institutions have been established and endowed where the chemist and the biologist can work in the closest coöperation. The importance of the intimate coöperation of these workers is evidenced by the work on the synthesis of a new anti-syphilitic drug which was recently accomplished in the laboratories of the Rockefeller Institute for Medical Research. This remedy is now tested from the clinical viewpoint in the hospital of the same institution. Similar institutions, however, are few in number and the capacity for work of this kind is necessarily restricted.

"A suggestion has been advanced which seems to cover the situation admirably, namely, that an institution somewhat analogous to the Mellon Institute be founded in which adequate provision for laboratory tests of all kinds would be made and to which, through the establishment of fellowships, manufacturing organizations could send well-trained young men for working out specific problems. Coöperation should be established between this institution and the organic laboratories of our universities, as well as with the hospitals of the country."

Dr. Herty names ten million dollars as the sum required for the establishment of the institute on an adequate basis. In his recent address before the New York Academy of Sciences, he said that the plans for the organization of the proposed institute were steadily progressing. He called attention to the fact that the need is urgent for some institution where "the ablest research workers among our chemists and pharmacologists can study life problems and can gain true insight into the fundamental reasons for the action of medicinals upon the body; an institute where, through the creation of fellowships, manufacturers can submit specific problems for investigation and solution under the most favorable conditions of expert work and abundant equipment."

This project was first broached at a meeting held at the Chemists Club in New York, last fall, which was participated in by a number of speakers selected for the occasion, who presented the subject from various points of view. Among the speakers were the chief chemist of the U. S. Agricultural Department, Washington, D. C. and the director of the Mellon Institute, Pittsburgh. Their discussion was listened to with much interest, especially on account of the questions suggested by what they said.

The question of auspices was under consideration and the chief chemist of the Agricultural Department said that such an institute as that proposed by the representative of the Rockefeller Institute for Medical Research, who first proposed the plan to Dr. Herty, and was the "well known organic chemist" referred to in his editorial, could not be conducted under governmental auspices, for the reason that the government with its experts and laboratories is working for the entire American people and cannot favor in its operation any one class of the community. As already stated, the plan proposed is somewhat of the character of that operated by the Mellon Institute, the director of which stated in his discussion that the results of the researches made by the Institute concerning problems placed in its hands for solution were of a confidential character, and under no circumstances is the manufacturer who has his products tested permitted to exploit the Mellon Institute in advertising.

Now, what the medical profession want and urgently need are therapeutic verdicts from competent authority, in relation to so-called new remedies, and, judging from the editorial in the *Journal of Industrial and Engineering Chemistry*, already quoted, the editor is aware of that, and the plan of the institute includes the pronouncing of such verdicts by competent authority. How are such verdicts to be obtained? Evidently, according to the editorial referred to, they are to be obtained by "coöperation between the proposed institution and the organic laboratories of our universities as well as with the hospitals of the country." The "pharmacologist and the physiologist" cannot "determine the therapeutic value" of new therapeutic agents. Therapeutic verdicts, to be at all conclusive, must be the products of the observation of many competent observers, carried on under conditions of environment which will preclude the errors resulting from the personal equation and those resulting from differences in race, climatic and social conditions. To obtain such verdicts takes time. The history of medical science clearly demonstrates this to be a fact. Many years must elapse before sufficient clinical evidence has accumulated in relation to a new medicinal drug, chemical or preparation of the same, to establish its therapeutic position in relation to other

therapeutic agents used for similar purposes. The work of the chemist, pharmacologist, physiologist and physician are all required in carrying out the plan.

Is the plan of the proposed institute adapted for securing such verdicts? The answer to this question depends largely upon the question of commercial control of the products to be investigated. The ethics of the medical profession from the time of Hippocrates until the present obligate its members to donate the results of their inventions, discoveries and experiences to the profession, so that the same may be freely used throughout the world for the treatment of the sick and the prevention of disease. Every medical man connected with the universities, hospitals, professional societies and professional press, is bound by these obligations. How can coöperation between the manufacturers engaged in the pharmacal and pharmaco-chemical industries, on the one hand, and the medical profession and its educational institutions, on the other, be obtained, unless the materia medica products presented to the proposed institute of drug research be open to competition? Monopolized materia medica products and medical ethics are not compatible. Is the medical profession to let down the bars which now safeguard the sickroom from commercial exploitation? It is well known that the American Chemical Society favors the patenting of medicinal chemical products. Is the plan one for promoting the commercial interests of the manufacturers of patented chemical products? If so, what is to become of medicinal plants, galenical preparations, biological products, animal extracts, internal secretions, etc.? Do they not merit just as much attention from medical scientists as patented, synthetic chemicals? Is it not true that any plan devised for promoting the commercial interests of the manufacturers of any one class of materia medica products to the exclusion of one or all of the other classes would be a menace to the public health? If it were possible to raise ten million dollars for the purpose of paying physicians connected with the universities and hospitals to devote their time and attention to original research for the purpose of pronouncing therapeutic verdicts in behalf of commercially controlled materia medica products, would such verdicts be accepted by the medical profession as conclusive? Would they not be looked upon as "paid testimonials and write-ups?" Would the medical journals feel warranted in accepting the reports of such researches in their reading columns? Why should the publishers of medical journals do the advertising for the manufacturers of commercially controlled products without pay? Would not such reports be properly classed as advertisements and properly relegated to the advertising columns where they belong? Would not such a plan, if it could be carried out successfully, result in converting the entire educational machinery of the medical and pharmaceutical professions—medical and pharmaceutical schools and colleges, societies and press—into a great advertising bureau for the exploitation of the sickroom for gain?

Salvarsan has been cited as a type of proper commercial introduction. The choice is unfortunate. Salvarsan is a type, not of proper commercial introduction, but of German propaganda for exploiting the American chemical industries. The product was first tested therapeutically in the hospitals in Germany, a country in which *product* patents on chemicals are not allowed; and then *product* patented in the United States—in fact it was controlled by fifty American patents. The method of control was carefully planned to defeat the object of the United States patent

laws, the object of which is to promote progress in science and useful arts by granting inventors seventeen years' monopoly in the sale of new and useful inventions in exchange for the publication of full knowledge thereof for the benefit of science. The proper application of the patent law stimulates competition, which the Salvarsan plan effectually prevented and would have continued to prevent indefinitely except for the war with Germany, which resulted in throwing its manufacture open to competition in the United States.

The Salvarsan plan of commercial introduction had already excited the strongest indignation and condemnation of leading medical scientists in this country, and the adoption of such a plan by the American manufacturers engaged in the pharmacal and pharmaco-chemical industries is not to be considered as the proper one for obtaining the coöperation of the medical profession and educational institutions in the United States engaged in the teaching of medicine and pharmacy. The commercial introduction of new materia medica products by advertising is not only contrary to medical ethics, but a serious hindrance to progress in science and the useful arts of pharmaceutical chemistry and drug therapeutics.

The patent law requires that the invention shall be new and useful. It is a question worthy of consideration whether a chemical substance is new in the meaning of the patent law merely because hitherto unproduced. Every educated chemist knows in advance what chemical substances are possible and their chemical names. Both are fixed beforehand by recognized chemical laws.

It is the intent of the law that the monopoly shall be limited to seventeen years, after which the public at large shall have the right to manufacture and sell the invention on equal terms with the original patentee, whose right to the exclusive use of the invention then expires. These wise provisions of the patent law have long been defeated by a scheme for perpetuating monopolies indefinitely. Patents are obtained for chemical products under their chemical names, and short names are registered in the Patent Office as trade-marks, which are afterward used not as trade-marks to distinguish between brands of the products, but as synonyms to take the place of the long chemical names.

The German chemical houses were quick to take advantage of this abuse of the patent and trade-mark laws already existing in the United States. Monopolies were created in chemical products by patent and continued indefinitely by patenting alleged improvements, and registering names as trade-marks. The German chemical houses were thus enabled to control the American chemical industries along the line of organic synthetic products, including dyes and medicines.

In spite of protests which were frequently made to Congress during the past forty years, this system of abuse was permitted to grow and was looked upon as legitimate because it was "made in Germany" until the eyes of the American people were awakened by the great world war. The German patents were then investigated and it was discovered that in addition to the scheme for perpetuating monopolies above referred to, many of these patents had been obtained by fraud. This was discovered when attempts were made to reproduce the patented products by means of the processes described in the applications for patent.

Much study has been given to the subject by the former Alien Property Custodian, A. Mitchell Palmer, now Attorney General of the United States. We were informed by the Philadelphia *Ledger* for March 12th that

"A program by which the German strangle-hold is to be loosened from the throat of the American dye industry" was made public by Mr. Palmer on that date in an announcement of the creation of an American corporation to take over all the German dye patents and hold them as a trust for the benefit of the native industry. The plan is thus described: "The corporation, to be known as the Chemical Corporation, is non-commercial in character and already owns 4,500 of the *product patents* through which the Germans at one time practically controlled the manufacture of dyes in this country and wholly controlled the importation of them by European concerns which were not German. The Chemical Foundation will hold the patents for the various terms for which they were originally issued and by the granting of licenses under them within devote them 'to the Americanization of such institutions as may be affected thereby, and to the exclusion or elimination of alien interests hostile or detrimental to the said industries, and to the advancement of chemical and allied science and industry in the United States.'"

It is to be hoped that the Chemical Foundation will reform the abuse of the United States patent and trade-mark laws, especially in relation to new medicinal chemicals. New materia medica products should not be introduced by advertising. Their manufacture and sale should not be monopolized. They should be open to competition and introduced to science through the medium of the professional societies and press. Advertising should be confined to brands of products, presented to the medical and pharmaceutical professions through the medium of the advertising columns of the medical and pharmaceutical journals. Protection to brands by the proper use of process patents and by the employment of brand names, registered as trade-marks, may not be objectionable, but "product patents" whereby the sale of the products is monopolized by individuals, firms or corporations, hinders progress in science and commerce, discourages improvements in processes of manufacture, protects a system of therapeutic advertising, misleading in character, and therefore the entire patent and trade-mark system as thus conducted is inimical to the public welfare.

It is not my intent to discourage original research. The plan would be ideal if placed on an altruistic basis.

CHEMISTRY'S OPPORTUNITY IN PHARMACEUTICAL RESEARCH.*

BY GEORGE D. BEAL.

Professor Charles H. Herty, Editor of the *Journal of Industrial and Engineering Chemistry* of the American Chemical Society, has recently presented the question of a needed development of facilities for research on medicinal agents as applied to pharmaceutical chemistry. In the editorial column of that Journal for September last he relates a conversation with a chemist who has been prominent in working out methods for the manufacture of coal-tar medicinals. The question is asked, "Suppose during your researches you made some new compound which you believed would prove more efficacious against certain diseases than any of the known compounds whose details of manufacture you have solved, where would you turn to have it tested thoroughly?" And the reply, also quoted, was "I don't know."

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* Read at the One Hundredth meeting of the Chicago Branch, A. Ph. A., February 21, 1919.

Few editorials in the journals of that society have brought out the number of comments which have been provoked by those paragraphs. The New York Section arranged a symposium on the subject to which representatives of all of the allied groups contributed. A number of timely suggestions were made as to the manner in which such a need might be satisfied. These included the establishment of a research institute, the endowment of fellowships, the creation of research funds, etc. The chemical society has been so impressed that its Board of Directors has appointed a committee to analyze the situation.

The inference is drawn in the editorial that this country is without such resources, and that if the American Chemical Society does not come to the rescue as the sole accredited body of scientists in the country capable of solving such problems we will be unable to develop them. Questions similar to this have occurred to those of us who have given thought to the development of research touching on the scientific aspects of pharmacy. Probably, however, we have felt that the profession itself was in a position to take care of the problems as they presented themselves. At least we have felt that there was some latent appreciation of the opportunities in the field. Perhaps the spirit of research has not been sleeping so soundly as it has appeared to the members of the allied sciences.

A mistaken point of view is prevalent among the chemists to-day. There is a tendency to belittle all claims of pharmacy to a place among the scientific professions. This is due to a failure to inquire into and to understand the nature of the different organizations of pharmacists. Since the average person's contact with what he knows as pharmacy is over the counter of a drug store, he regards the pharmacist as a tradesman or artisan. He is likely to assume that scientific knowledge of the dispensing of medicines is only required of the man who writes the prescription. When talking of pharmaceutical chemistry, all emphasis is placed on the chemistry, pharmacy representing merely the channel through which the products reach the public.

This idea is present in the mind not alone of the laboratory chemist. Not two weeks ago a member of the Chemistry Committee of the National Research Council expressed the opinion that the American Pharmaceutical Association did not need and had no claims to representation on that committee. He stated in very plain terms that no trade organization need expect to be admitted, that the Council had as its purpose the promotion of research, and that only those who were directly interested in the development of the research idea need hope for admission. The writer took great pleasure in exhibiting the honorable record of the American Pharmaceutical Association and had the satisfaction of hearing him admit his misconception and say that the Association was clearly entitled to representation thereon.

The American Pharmaceutical Association has been a medium for the promulgation of new knowledge and the development of the research idea for nearly seventy years, practically three decades before the American Chemical Society came into being. After reading the early volumes of Proceedings one usually concludes that the American Pharmaceutical Association was the forerunner of this other society, and that the latter came into being only when the field of chemistry in this country had finally developed beyond the stage of medicinal chemicals. There are certain journals published in this country whose pages for even a longer time

have been monuments to the untiring zeal of the pharmaceutical investigator. Botany as well as chemistry has profited by the versatility of those men whose names head the pharmaceutical roll of honor.

This Association has for a number of years recognized the need for steadfast encouragement of the spirit of investigation by the creation and continuance of its research committee. The Division of Pharmaceutical Chemistry of the American Chemical Society has endeavored to support this idea, in part through its Committee on Analytical Methods, organized with a similar end in view.

The University of Wisconsin has taken one of the most noteworthy steps in this direction by securing from the state legislature an appropriation for the establishment at the University of a Pharmaceutical Experiment Station. There under the able direction of Prof. Edward Kremers many valuable results have already been obtained in the development of the pharmaceutical resources of the state. We may mention particularly those studies in the cultivation and marketing of medicinal plants and those leading towards the extension of the volatile oil industry to embrace those oil-bearing herbs which may be profitably grown in that state.

Many people have the idea, as Professor Herty may, that research in drugs must of necessity content itself with the proving and standardization of new remedial agents. The question as to whether or not too much stress is laid on the development of new remedies, and whether the liberal use of an editorial blue pencil on to-day's materia medica lists, particularly of the synthetics, might not result in decided benefits, is at least debatable. We can afford for a time to do with less of such advancement and make a greater effort to determine with accuracy the properties and the underlying reasons for those properties of the many agents which are already known. Such a study will prove the truth or falsity of the claims made for certain vegetable drugs and synthetics, clarifying the materia medica to that extent. This will make for the more efficient use of synthetic and phyto-chemistry and should cause a greater development of organo-therapy.

The past war has developed the latent chemical resources of this country and its people to a remarkable extent, and much of the energy expended in the development of chemical warfare materials, particularly the toxic agencies of combat, can be rapidly turned into the field of synthetic medicine. I feel that we shall have lost one of the material benefits of this war if we do not succeed in making some real use of this talent in the permanent advancement of pharmaceutical knowledge. The average chemist of research caliber is ready and willing to deal with any question of real necessity. In order to avoid duplication and to secure the selection of really desirable fields of work, some agency is advisable from which the general line may be indicated. The writer is of the opinion that some sort of a centralized research bureau should be instituted, in fact, it is becoming necessary if we are to utilize to the greatest extent the resources mentioned.

It has been proposed by a number of writers and speakers that there be established in connection with one of our universities a research institution similar to the Mellon Institute of Industrial Research at the University of Pittsburgh, organized by the late Robert Kennedy Duncan. Such an institution must be endowed as to building, equipment and general administrative and operative staff. It will be possible to refer problems necessary of immediate solution to

the general scientific staff for their study. These will involve pharmacological testing, development of methods of analysis, improvement of manipulatory methods in the plant, the suggestion of new sources of material and the development of new commercial avenues for old products and by-products. In short, such an institute would do for the profession generally what the research and control laboratories of our large corporations do for those organizations.

It is hoped that fellowships will be generously endowed in part for the study of specific problems in which the donors have an interest and in part for study of a graduate order for the advancement of pure science. Nominations to these fellowships would undoubtedly be made by the universities; election ought to be by the governing board of the institution for it appears that they would be the only authority in a position to compare the qualifications of all of the nominees.

In order to be of maximum service the organization must be placed upon an extremely broad footing with the greatest liberality in its field of operations. There is always the danger that an institution which draws its support from the industries may be forced by financial circumstances to devote its time to these industrial problems, in such a way that the spirit of research may become stunted or even choked altogether in its growth and the institution fail in the accomplishment of its purpose. But if in establishing fellowships as liberal action is taken as has been done with the duPont Fellowships instituted in our leading schools during the past year, I believe that the foundation would be in a fair way to accomplish all that it has set out to accomplish.

In order to provide for the greatest possible growth it seems that it would be desirable to secure the establishment at first of a foundation rather than an institute. In the latter case there must be a large initial outlay for the physical plant, administration and operation, and unless such a plant is provided for by outright gift, the capital required in the way of endowment would undoubtedly prevent for some time the commencement of the project. If the work be begun by a foundation, on the interest of a sum held in trust by certain trustees administering the foundation, the establishment of some fellowships is assured and investigational work can be begun by one man in any university laboratory. This plan is not the one which has seemed to be popular, and would not result in the immediate provision of the laboratory resources called for in the editorial which suggested this paper. It will serve as a real working basis and is capable of unlimited development. By all means, let us have our research institute, with its laboratory facilities and research staff available for the assistance of all investigators in the field, but let this laboratory be a natural growth from the foundation, and do not let its coming at first absorb all of the strength which might go towards the promotion of study in the laboratories of nearly every state in the Union.

I have mentioned the need for some sort of centralization of research, some sort of clearing house of ideas, as it were. This is the general policy underlying the National Research Council, which is a child of the National Academy of Sciences. In this council all of the national scientific societies whose object is the advancement of learning are banded together for the prime purpose of preventing lost motion in investigational work. The Council stands ready at all times to suggest lines of study and to advise in the prevention of too much duplication. It will suggest possible avenues of development along which an investiga-

tor may proceed because it is so in touch with the different laboratories that it can provide for the interchange of information and material, for the want of which many an investigation has been abandoned.

To illustrate, the Division of Chemistry and Chemical Technology, one of the nine subdivisions of the Council, during the first year of its existence assigned over one hundred and ten research problems to single chemists or chemical committees in this country. Many of these have been successfully solved because the investigators were able to draw upon all of the facilities for research which their laboratories afforded. The Division has in addition handled many requests for information regarding manufacturers and sources of material used in the industries and in research, has brought about coöperation between investigators on allied problems, has directed the attention of manufacturers to investigations related to their field, and has acted generally as a central clearing house of information.

It should be possible to have in pharmacy a central body in possession of much information of value to any worker; able to procure necessary literature, to secure the coöperation between the manufacturer with an abundance of material and the investigator having behind him only the frequently limited resources of school laboratories. An institution of this kind could be represented directly in the various fields by its own agents, or by the agents of corporations which would ultimately benefit by the development of those new resources. A wealth of material for investigations would speedily become available to any laboratory, no matter how meager its funds for research.

There is difficulty in the testing of new medicinal agents unless the discoverer has the proper pharmacological training. If one is associated in a university with a skilled technician the resources of his laboratory are usually available. With a certain amount of training and supervision the chemist himself can acquire the necessary manipulative skill and ability to interpret results in a rather limited field. But as the chemist and pharmacologist grow in experience and gain a reputation in their fields they usually make for themselves a position of responsibility in their faculty circle. This results in extended duties, administrative tasks, advisory work with students, the direction of large laboratories and courses and a rapidly extending relationship to the whole institution. Unless the investigator be a very exceptional person, the opportunity of continuing his personal investigations has gone glimmering. He must take on research students, divide his problems among them, and content himself with brief conferences and rapid perusals of reports, and the wheel begins another revolution with these younger men.

The investigator may be connected with some manufacturer or have the fortune to interest some manufacturer in his work. In order to secure aid of this latter sort there is necessarily some sort of agreement regarding the possesssion of production rights to this and other substances derived therefrom. Such an agreement must be entered into in good faith by both parties in order that there will be, on the one hand, no throttling of research ambitions, and, on the other hand, a genuine recognition of the financial support which is making possible the continuation of the study. The one danger most likely to come to pass is that the

student's time will turn gradually to those lines which are profitable financially with too little attention to the scientific development of the field.

One of the greatest obstacles in the way of the investigator in plant analysis is the difficulty of securing allied species for comparative study. The writer has for several years been engaged in a study of the chemical composition of the plants of the Rumex family, especially as a source of medicinal agents of the anthraquinone group. Because of limited resources, even in the State University, it has been necessary to limit the investigation to the rather narrow field of a few members of the family found in the United States. The literature reports a partial analysis of the root of an European variety and the composition of the above ground portion of an African variety. If there happened to be some central body with correspondents in different parts of the globe, it should be possible for an investigator to secure enough of representative samples to make the desired comparative study.

There is room now for coöperative work in plant analysis by which a revision will be made of the compositions as previously published. Lloyd and others have pointed out that by the methods formerly used, the proximate principles previously reported have been largely decomposition products of colloidal principles which were directly the result of vital processes within the tissues. This doubtless explains the difference in physiological effect frequently noted between simple drug preparations and crystalline derivatives and also may explain the failure to coördinate physiological activity in many instances with the result of chemical assays.

Alkaloidal assaying consists chiefly of the application of methods designed to take advantage of the comparatively simple differences in physical properties of these bases and their salts. The "shaking-out" process is based upon the principle of the coefficient of distribution. It has been possible by direct measurement to determine the efficiency of the extraction of each alkaloid, which in the case of a single one in a drug constitutes a quantitative separation. In many plants there are a number of related alkaloids, one of which by a slight variation in structure may have more intense activity. The determinations of this individual in a mixture then will require the recognition of a difference in chemical properties, or the formation of a derivative with such properties, as a basis for its separation. These, as a rule, are not problems of a difficult nature, but require careful attention to detail with many duplicate determinations. They are not likely to be taken up without hearty encouragement and support which will render possible the neglect of other work for the time.

The chemistry of American volatile oils cannot progress much farther until provisions are made by which the investigations can be carried into the field. Here, as in the matter of drug composition, all depends upon the authenticity of the samples. The chemist who can go to the herb plots for his material, or who can carry his still into the woods and take the oil as it comes from the plant, has an immense advantage over the chemist who must obtain his supposedly genuine subject from a New York or Chicago jobber. Some one must pay car fare to the woods, and provide portable apparatus, or must furnish plots and agricultural labor for the herbs.

Two of the most striking recent examples of coöperative research have been the development at the Rockefeller Institute of an important anti-syphilitic and the development by Dakin, Dunham and Daufresne of the line of chlorine containing antiseptics from the hypochlorites under the auspices of the British Medical Research Council and the Herter Laboratories of New York. Here the actual proving of the value of these compounds was carried out by beneficiaries of the Rockefeller Institute, in hospitals operated by them. I believe there has been no greater triumph of science in the last war than along the line of the alleviation of suffering and the removal of the liability of the frightful after-fatalities of the battlefield, a triumph which can be traced altogether to the strong organization for research.

Probably more efficiency could be shown in the revision of the Pharmacopoeia if in the past there had been possible a carrying over by a central organization of the Committee on Revision with its sub-committees by whom the necessary investigations could have been carried forward simultaneously with the appearance of the various factors necessitating this revision. The collection and correlation of the mass of literature which appears on any important subject in a decade is no small task. While work being continuously carried forward may be invalidated from time to time by findings of the investigator or by other circumstances, there is no lost motion in taking up the scattered threads of the subject and piecing together a new fabric, more durable than the old, and having greater validity because of the errors recognized and overcome.

The Drug Laboratory of the Bureau of Chemistry at Washington has published some valuable papers on the identification and estimation of the newer synthetics, laying stress on those of more common occurrence in headache and cold remedies. At the same time there are being offered in some of the leading universities courses in qualitative organic analysis having to do with the identification of pure compounds and the separation of mixtures. These courses are being offered by men who in many cases have brought long years of training as research chemists to their work. They have developed simple methods of attack by means of which a student of limited experience but with a thorough grounding in the fundamentals of organic chemistry can rapidly solve the composition of complex mixtures. Such students have but one obstacle to contend with, they are unfamiliar with therapeutic properties and cannot associate substances as is done by the chemist who has devoted his time to the medicinal use of synthetics.

The writer is fearful lest the delegation of the promotion of pharmaceutical research to one institution or association not directly allied with pharmacy may result in the defeat of the purpose which its projectors are attempting to achieve. If pharmaceutical research be made a function of the American Medical Association we would expect it to be interpreted in terms of therapeutics; if of the drug manufacturers it would cause the establishment of a laboratory where manufacturing pharmacy in all of its ramifications would be studied on a large scale and where cost accounting might well be the criterion by which all results would be measured. The National Association of Retail Druggists finds its real interest in the problems which affect the profits and losses of the retail trade, while the American Chemical Society would have a tendency to view everything in its chemical phase. Each group will pay only minor attention to the contributory data which

has been laboriously brought together students in other fields ever since pharmacy first became a science.

No one association, representing one of the contributing sciences, and not having its major interest in the field as a whole, can be expected to make the generous provisions, nor offer the broad-minded administration or direction, which such a foundation requires. I believe most emphatically that if the United States is to have an institute of drug research, it should be all that the name implies, and should be controlled, or at least feel the guiding hand of, that group which will finally be obliged to accept or reject and be governed in every sense by its findings.

There is only one organization in the United States which has the broad foundation necessary and is so organized as to contain within its membership students from every associated field. That organization is the American Pharmaceutical Association. It has already asserted its right to be the promoter of drug research and has done more than any other organization of the country toward this purpose by the creation of its research committee and by the establishment of a fund for its development out of the sole earnings of the Association.

This sum might be made the nucleus for a large fund to be obtained by donation from those most interested in the promotion of pharmaceutical knowledge. Much will depend upon the attitude to be taken by corporation members, but the Association should not look to those alone. The interests of the foundation should be the interests of each member, and an investment in the foundation cannot fail to return dividends to all of those coöperating in its creation. Most institutions must have small beginnings, but if it is the will of the members of the American Pharmaceutical Association that the Association continue to recognize and forward research, their determination will result in an establishment which will remain for all time as a monument to the ideals of the Association.

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THE TACK IN THE TIRE.*

BY W. L. SCOVILLE.

This is the automobile age; an age of speed, of rapid changes, of swift development. Five years ago—just a little more than the space of a college course—the world was at peace. The road was clear and smooth and the weather was fine. Riding was good. Then suddenly just around a curve the German machine viciously struck the Belgian car, telescoped it, and rushed into the French car coupled with a low-powered British. These stood the shock without collapsing, but were driven back until the German machine realized that it, too, was seriously damaged. Then began a struggle for the roadway which lasted four and a quarter years, which developed ways and means of powers, of repairs and of efficiency with startling rapidity. And because men of science, of skill, of thought, and of dexterity set themselves wholeheartedly to the task of clearing the road and making it "safe for democracy" the struggle is now over and the rebuilding is begun.

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* Read at the One Hundredth meeting of the Chicago Branch, A. Ph. A., February 21, 1919.

But it is a new world. Speed records have been broken, and the speed of living and of accomplishment is advanced. The "flivver" of to-day can beat not merely the star trotter of yesterday in speed but can beat a hundred of him in endurance. Not only speed but the standard of distance is increased.

Now increased speed and longer distances bring new and varied scenes into view. The vision is broadened and the rural fields, where life begins, attract the sight. The world has ridden out into the fields of science, has seen men of science perfect almost in a day the aeroplane, design the tank, evolve means of protection from noxious gases and invent new gaseous poisons, perfect foods, find improved methods of healing wounds and make whole men out of men with parts missing. The world has learned that back of the operators are the scientists who have discovered what and how to operate. That back of the factory is the place of learning, and that the college is but the commencement of learning. That every branch of material things leads back to a small place of experiment, of investigation, of testing and of decision. That science underlies most of the material things of life, and that men of science have played a fundamental and important part in ending the titanic struggle in which the odds were first with the heaviest machine. Science has come to the front, and is destined to wear honor decorations. It will receive new homage and be accorded a new place in the vision of the peoples.

Where will pharmacy come in? Will it get a recognition as a branch of science? Will it pose as an observer or as one of the observed? The answer is not flattering. In the great war struggle pharmacy was classed as a non-essential vocation. It was denied leadership and initiative. Why? Is it not because pharmacy has been riding in the tonneau instead of driving? Because it has been content to be a passenger in the car of chemistry or of medicine instead of driving its own car? There is a world of difference between driving a car and being a passenger therein. The passenger keeps up with the pace, gets all of the view and most of the enjoyment, but the driver picks the road, is alert for obstacles or chances, makes quick decisions and is responsible. He sees less, but he sees the essentials and achieves them. His eyes are always ahead, and he is working with hands and feet and head to get there. He follows or sets the pace as opportunity offers and he is alert to opportunity. And he gets the credit for the pace and accomplishments of the car.

II.

Now under the simile of the automobile I have suggested that pharmacy lacks influence in the scientific and professional world because we have been regarded as adjuncts to chemistry or of medicine rather than as a branch of those sciences with problems and utilities of our own.

We have not impressed the world with the idea that we are a real branch of science, although pharmacy has been an important factor in the development of chemistry and medicine.

Chemistry started in the laboratory of the apothecary, and we are proud of our Scheele and Liebig and those pharmacists of the early days who laid the foundations of chemistry. And medicine too owes a lot to such pharmacists as Sertürner, Pelletier, Goulard and many others who helped to establish therapeutics

on a sound basis. But we cannot live in the past, our eyes should now be to the front, and our pride be delegated to our apprentices. Is pharmacy to be swallowed up in other sciences and lose its identity, or will it find a new place for itself by search—or research? Is there nothing of value to mankind that pharmacy should develop, not already known?

Our Association has already laid the foundation for funds to support research, and other funds are available when the need and the worker can be offered. But research depends more upon a spirit than upon an opportunity. It starts in the mind and the ambitions of men, not in the treasury. And it is fundamentally an individual question. Results will be of collective value, but the initiation of the results must be individual.

A profession is advertised through its leaders, not through the rank and file. So if pharmacy is to become known to the public, it will be through the achievements of its leaders. Affiliations of interests within pharmacy may help to develop leaders, but it cannot create them. Furthermore, the qualities which make political leaders rarely develop scientific leaders.

The development of research in pharmacy must depend upon the few rather than the many: upon those who are interested in the professional and scientific aspects. This means the colleges and a few manufacturers or manufacturing pharmacists. But it is to the colleges that we must look in large measure for research, for not only is the atmosphere of the college most favorable but research is itself a valuable form of teaching. If the research is done by the professor and instructors, the students will get some of the spirit and enthusiasm. But there is also opportunity for research by the students, under proper direction. That they are not qualified for the advanced work is plain, but there are many questions in which student aid is valuable.

In the perfecting of formulas their very inexperience is an advantage. And in the development of facts which require repeated experiments they can do much of the work without sacrificing anything of the educational training.

I have wondered whether the long list of standard preparations and prescriptions which students are called upon to prepare in the college laboratory is wise. Repetition is necessary in education, and each preparation may involve some new or modified principle which is valuable for teaching. But is an exclusive technical training on these lines the most valuable outlook for their future work? Is the trend of the times demanding more training in pharmaceutical manufacturing or prescription practice? If it is not, the question may be asked whether our education has been looking ahead. Whether we have not been so interested in the history and development of pharmacy that we have forgotten to prepare for its future. Whether our attention has not been too much to the satisfactions of the past, and not enough to future developments.

Labarraque's Solution, for instance, has been a familiar preparation for many years, but no pharmacist thought—constructively at least—that its caustic properties prevented its development as a therapeutic agent. When an urgent need for such a preparation sprang up, the problem of adapting it to its purpose was not beyond the ability of some of our students.

There has been a great development in iron preparations in recent years,

but whether the popularity of certain forms, as Blaud's pills, is due to an advantage in that particular salt of iron or mainly to its chemical sensitiveness, as contrasted with more stable salts of iron, has not yet been shown. Are still more chemically-active forms of iron available which have not yet been tried out?

Have we been too empirical and superficial in our pharmaceutical problems?

When the war demanded almost our full resources of glycerin, and the question was asked whether pharmacy could not reduce its use of this article, who was in a position to pass sound judgment on the question? Who knows what is the real function of glycerin in pharmacy? That it hinders or prevents precipitation in many preparations has been repeatedly observed. But whether it owes this property to its solvent action or to a protective quality has not been determined. If its chief value in pharmacy is as a solvent, then it is a necessary adjunct. But if it acts as a protective agent, preventing oxidation or reduction, or simply increasing density, then there are other and more economical agents which can take its place. We have been far too content with the observation of results, and too little concerned with the principles by which the results are obtained, and so we lack a scientific foundation upon which to build our applications.

The wave of prohibition now just commencing finds pharmacy ill-prepared to judge just how important is alcohol in medicinal preparations. We know how much is needed to prevent fermentation, and how much is required for extraction and reasonable permanency in solution, but the function of alcohol in preventing chemical and therapeutic deterioration is yet but little understood. Yet this is one of its most important functions. Modern pharmacy is very largely a development from the infusions, vinegars and wines of the older days to the more permanent and reliable alcoholic menstrua of to-day, and we should be qualified to give a better answer to-day to the questions regarding the necessity of alcohol in medical preparations, entirely aside from its therapeutic value, than we are now able to give. And because we lack much of specific information in this regard we are threatened with a return to obsolete and unreliable medication through the zealous efforts of prohibitionists. We need to appreciate more the value of alcohol in preserving medicinal activity as well as in preventing putrefactive changes and precipitation, aside from its solvent function.

The medical agents of the future must be more reliable than those of the past or present. Standardization must grow. There are still a number of alkaloidal drugs and preparations in the Pharmacopoeia (as Lobelia, Veratrum, Gelsemium, Sanguinaria, Gossypium, etc.), for which no assay process has been evolved that is satisfactory. The time will come when cathartic drugs, astringent drugs and the bitters, and their preparations will be standardized. Reliability is the watchword in pharmaceuticals.

Pepsin is now standardized, but little attention has thus far been paid to the reliability of liquid preparations of pepsin—in which form by far the largest quantity of pepsin is administered.

The above are but suggestions. There is no lack of subjects for research in pharmacy, some fundamental and some perfective. And the variety is sufficient to furnish work for several grades of equipment and training.

III.

Research is primarily an attitude. It is a search for the undiscovered. An interest in the future.

Education is the development for the future. It implies instruction in the arts and sciences of the present and a preparation for that to come. An education which covers thoroughly instruction in past and present conditions but neglects questions as to the future, lacks virility. It is interesting but not progressive. It may make animate encyclopedias but it cannot claim credit for constructive men.

Is not this the main difficulty in our pharmacy schools? Men and women are graduated who understand the whys and wherefores of the pharmaceutical art and science of the past, but who have no definite idea of the tendencies and needs of the future. Pharmaceutical operations and preparations are taught as though they were finalities instead of progressive. Labarraque's Solution was a finality for two generations, but when it was found lacking in an important quality it quickly became the parent of a new and modernly useful preparation. And the history of this may be paralleled by many other pharmaceutical preparations in the future. For if pharmacy has attained to the limit of perfection even in standard preparations, we must soon prepare for the obsequies. But it is for us to say whether pharmacy is senile or is still growing.

Does it make no difference in teaching the subject of pills, for instance, whether we simply teach three forms of pills—hard, friable, and soft mass—and several forms of coatings, as though it were all merely a matter of choice, or whether we begin with the hard-mass pill, and develop it through its series of coatings, designed to prevent taste, then come to the friable pill, developed to improve solubility, and then discuss the soft-mass pills as a further evolution, and finally leave the student with the question in his mind, evolved rather than suggested, whether we have yet attained the possible perfection of pills? Would it be any better pedagogy to teach the tincture as an evolution of the vinegar and wine—and possibly of the infusion and decoction—and to point out the constant tendency to increase the alcoholic strength in order to obtain therapeutic stability?

So may all the preparations be presented as stages in the evolution of pharmacy, and an interest in future developments created in the mind of the students. Then after a period of postgraduate practice there might be found less tendency to complain that there is so little use for the science of pharmacy as taught in our colleges, and more interest displayed in using that science for the perfection of pharmaceuticals and the meeting of modern needs.

The business end of pharmacy has developed largely through the incentive to experiment. Old business methods that were good enough for our fathers are not good enough for us, and the proprietor experiments on new methods. Some succeed and some do not, but the essential difference between business and scientific research is that the former brings quicker results. The business man must constantly look ahead, try new things, plan new appeals, hold whatever is good of the old but prove all things. This is essentially the research spirit. Cannot our pharmacy schools fit some of that into the scientific end of pharmacy? Instead of dwelling long and minutely upon the preparations on the lists, preparing a large number of them in the laboratory, and creating the impression in

the mind of the student that the preparations of a generation ago, still in demand, are typical of to-day, should we not devote less time to the details or modifications of pharmaceuticals and train them a part of the time through experimenting on improvements or on new things? What they may discover will be of far less value than the inquisitive mind and the forward look which they may develop. To graduate them with clear and definite ideas of the imperfections and possibilities of their profession is to create a new courage and determination to improve it.

If research is to develop in pharmacy it must derive its spirit from the colleges. What research the professors and instructors, with or without the help of students, can do will be valuable. But beyond that the manufacturers and institutions must look to the colleges not only for the training but for the scientific spirit. So must we have the research spirit before the research laboratory. The latter will come after the spirit is shown to utilize it. When a single individual responds to the need for a local new college building with a construction and equipment aggregating nearly a million dollars, it is plain that an equal need for an institution of more than local need must only be recognized to be met. But recognition includes a preparation for its use as well as a use for its results.

IV.

There are two incentives to research. The desire for discoveries that shall bring direct financial results, and for discoveries that shall be of permanent service to our vocation and the world, and shall bring us satisfaction.

I suppose that in all cases of research, both motives exist, but one will predominate in any given case. Both motives are desirable. The commercial motive in its pure form tends to obtain and apply results quickly, but it inclines to be satisfied with results that, though superficial, meet present conditions. The altruistic motive aims further, but tends to supersatisfaction with discoveries already made and to accept as final whatever seems good from an altruistic standpoint. Each motive is impatient with the other. One is too eager for the new, the other too content with present foundations. One tends to develop greed, the other pride. But neither greed nor pride are a sound basis for progress. And since human nature tends to one or the other, counteraction is desirable.

This is the essential difficulty with the special research laboratory. It usually demands the right to pass final judgment on questions which it has worked out, because its results are "scientific." And finality of judgment is more often the foe to progress than may seem.

Judges in law are trained to weigh evidence and decide on the merits; and they find it easier to weigh than to get the full evidence. So in science. We need all the incentives to get full evidence before we can come to sound and lasting judgment. "Impartial judgment" is an attractive phrase, but it more often means impatient than impartial. It inclines to base judgments upon present knowledge, pride and prejudice rather than upon all possible evidence. To give undue weight to what is known and to refuse it reasonable limitations.

Thus even in research, we need the stimulus of rivalry and opposition to secure fairness. It is but human to search out the evidence that justifies our bent, and to be content with that.

So if special research laboratories are to be established for the working out of Pharmacopoeia and National Formulary problems, or for coöperation in commercial problems, these should not be made final. There should be other courts of appeal. Altruistic labor has this advantage, that while it is usually less thorough in its work, it is more open in its acceptance of evidence.

The special and the coöperative research laboratories are very desirable. We can accomplish much through them. We should not distrust them nor cultivate a critical spirit, but we must not lose sight of the fact that science is the interpretation of known facts, and that all facts are not yet known, and that interpretations may not be infallible.

Commercial laboratories are doing much of unselfish altruistic work in research, and college professors are not lacking in sympathy and understanding of commercial conditions. This favors coöperation. It is a factor which the technical industries are beginning to develop systematically. Technical students are being delegated to industrial shops for a part of their college course, such experience being a part of the curriculum, required for graduation. And the industries are turning over some of their problems to the college laboratory for research. Such conditions are to be encouraged.

We shall arrive at more satisfactory and lasting conclusions by developing both motives in research than by trying to establish a single laboratory, however well equipped with men and tools, which shall pass final judgment on scientific questions.

BALLOTA HIRSUTA, BENTH.

AN ADULTERANT OF HOREHOUND (*Marrubium vulgare* L.).

BY CLARE OLIN EWING AND JOSEPH F. CLEVENGER.

Within the past two years a number of shipments of "Horehound," *Marrubium vulgare* L. offered for entry proved to consist entirely of the young herb of a spurious species, which was identified in this laboratory as *Ballota hirsuta* Benth. This finding was announced in Service and Regulatory Announcements, Chemistry 20, Item 212(1917), although no details were given, since at the time the Bureau had not adopted its present policy of including descriptive paragraphs regarding adulterants found in crude drugs. More recently there has come to our attention a shipment of horehound in interstate commerce which proved to contain approximately 25 percent of material from this same species. A sample was referred by the commercial firm interested to a consulting analyst, who erroneously pronounced it to be *Ballota acetabulosa* Benth., and not *Ballota hirsuta*. The two species resemble each other closely, and both so nearly resemble true horehound that it is not easy to point out striking macroscopic distinguishing characteristics, which are especially difficult to detect in the dried and crushed condition in which the material is imported. In view of the instance of confusion of the *Ballota* species above cited, as well as because of the substitution of a spurious product for horehound, it is thought that a brief statement of the chief differential charac-

teristics of the three species may be of interest. These data are based upon the examination of specimens in the National Herbarium of the Smithsonian Institution, Washington, D. C., and the New York Botanical Gardens, Bronx Park, New York City.[1]

FIG. 1.

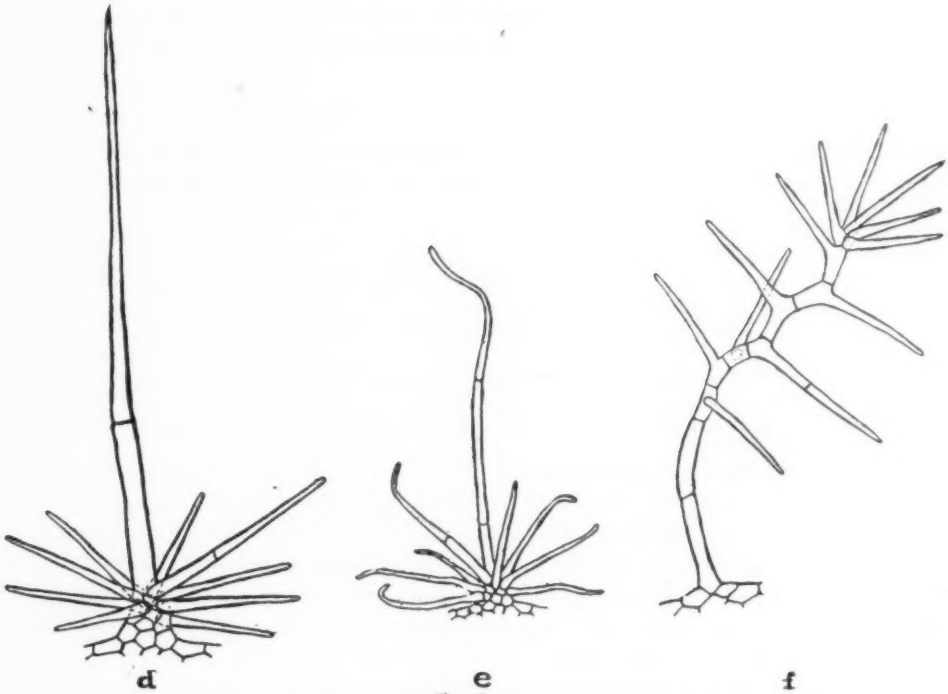

FIG. 2.

Differential characteristics of *Marrubium vulgare*, *Ballota hirsuta* and *Ballota acetabulosa*.

FIG. 1.— I. Calyx margins × 6. (a) *Ballota hirsuta*. (b) *Marrubium vulgare*. (c) *Ballota acetabulosa*.

FIG. 2.—II. Characteristic hairs × 60. (d) *Ballota hirsuta*. (e) *Marrubium vulgare*. (f) *Ballota acetabulosa*.

The leaves of the three species in question are so similar that examination with a handlens does not enable one readily to distinguish between them. The herb, however, is nearly always collected in the flowering condition and the shape and lobing of the calyces of the flowers, which are generally fairly abundant,

[1] Specimens were kindly made available to the Bureau through the courtesy of Dr. N. L. Brittin, Director.

afford the most striking means of differentiation. The calyx of true horehound, which is only about half as large as those of *Ballota acetabulosa* and *Ballota hirsuta*, is tubular, whereas the calyx of both *Ballota* species is nearly funnel-shaped. The margin of the calyx of *Ballota acetabulosa* has 10 to 20 very obtuse lobes, in fact it is almost crenate (Fig. 1-c); this distinguishes it from the dentate margin of *Ballota hirsuta*, whch has 10 to 20 acute lobes (Fig. 1-a); in both species the lobes terminate in very short nearly awl-like teeth barely one-half cm. in length; both thus differ markedly from *Marrubium vulgare*, which, as is well known, has 10 awl-shaped recurved teeth about 2 mm. in length (Fig. 1-b).

Under the microscope the leaves of *Marrubium vulgare* show tufted hairs, which are usually curved or bent and almost sessile (Fig. 2-e). Those of the leaves of *Ballota hirsuta* are usually straight and are somewhat elevated by a multicellular basal stalk (Fig. 2-d). In both cases one hair generally attains a considerably greater length than the others and may contain 2 or 3 cells; this elongation is perhaps more frequent and pronounced in *Ballota hirsuta* than in true horehound. The tufted hairs of *Ballota acetabulosa* have a long, oftentimes much bent central stalk, from which many straight hairs branch (Fig. 2-f). Other types of hairs are present on the leaves of the three species, but they are not especially characteristic. The non-glandular hairs in the throat of the calyces furnish another microscopical characteristic which distinguishes both *Ballota species* from true horehound. In the former these hairs contain tiny prismatic crystals, presumably of calcium oxalate—they are insoluble in acetic acid and soluble in hydrochloric acid. The hairs in the throat of the calyx of *Marrubium vulgare* show no crystals.

No chemical data regarding *Ballota hirsuta* appears to be available in the literature, and it is therefore impossible to state whether it might be valuable as a substitute for horehound in the manufacture of cough drops or other medicinal preparations. It has, however, an agreeable odor and may possibly be a desirable material for use in the manufacture of confectionery. Its similarity in odor to true horehound seemed so striking that for purposes of comparison a small amount of candy was prepared from an infusion of the material. The flavor was not at all unpleasant and very closely resembled that of a candy similarly prepared from genuine horehound.

PHARMACOGNOSY LABORATORY,
BUREAU OF CHEMISTRY.

THE CULTIVATION OF MEDICINAL PLANTS.*

BY GEORGE P. KOCH.

War with all its horrors, and terrible as the results may be, does produce some good. It stimulates production, compels efficiency, and teaches us to be more self-reliant.

This applies to every phase of our national life, and one of the results of the great world war has been to teach the United States how it may produce the supply of medicinal drug plants necessary to its health and life.

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* Read before Philadelphia Branch, A. Ph. A., February meeting, 1919.

Before the war most of the crude drugs used in this country were imported and many were supposed to be unsuitable to our climate and soil conditions.

War rendered importation impossible and compelled us to learn how to grow these drug plants in this country, whether conditions were suitable or not.

This has been done, and the United States is now able to grow the more important drug plants within its own borders, in large quantities and at a commercial profit.

Cultivation of medicinal herbs is reported as early as the middle of the sixteenth century, when plants used for medicine were grown in Italian gardens. About sixty years later, a large tract of land was set aside in Paris for a botanical garden, a portion of which comprised the "Jardin Botanique de la Façulty de la Medicine." Then other nations began to devote their attention to the cultivation of medicinal herbs. Medicinal plants have been grown in the United States for the last two centuries, and for many years were termed "healing herbs." Their crude products formed the remedy used. As soon as commercial preparations appeared on the market, many small, private gardens of healing herbs were discontinued, as it was cheaper and more convenient to buy the more standardized preparations than to grow and use the plants. Thus, individuals, companies and corporations devoted their interests to collecting medicinal plants and preparing commercial drugs. There are, however, still many medicinal plants that are grown in a small way in private gardens. These plants are used in cookery, for decorative purposes and, to a small extent, for their medicinal value.

There is a great variety of plants used for medicinal purposes, but the amount of them is very small compared with staple crops, such as corn, wheat and potatoes. Many of the drug plants grew wild, and their leaves, roots or barks were collected and sold to those interested in manufacturing.

As more and more of the wild and virgin soil was brought under cultivation, there was less area for these wild growing herbs. Consequently, as the wild plants disappeared, the prices steadily advanced. With the advance in price to the point where cultivation was profitable, individuals began growing these plants under commercial conditions.

As the cost of production of medicinal plants was considerably less in foreign countries than in the United States, the greater amount of the crude drugs was imported. Hence, drug culture never became a very important phase of agriculture in the United States. The only medicinal plants that were cultivated were small crops yielding volatile oil, and various species of medicinal plants grown by pharmaceutical departments of universities, principally for class work. A few large companies engaged in the manufacture of drugs were carrying on experiments concerning the culture of a few plants. It was not until 1914, when the importation of crude drugs was checked, that we began to realize how dependent the United States was upon other countries for these products. With the steady increased demand for crude drugs and a continued lack of supply, prices advanced rapidly. These high prices furnished a great stimulus for drug raising in the United States. Making easy money by raising drugs, for a time, was a popular newspaper story. Several of the large drug manufacturing houses, State experiment stations and pharmaceutical departments of the large universities, began

extensive experiments to determine to what extent medicinal plant culture could be successfully and profitably carried on in the United States.

The cultivation of some medicinal plants is no more difficult than that of some agricultural plants. The principal objection found in propagating these plants in this part of the country is that it requires considerable hand labor. Hence, as the wages paid are high, the cost of production is usually rather expensive. Thus it was desirable to perfect methods, wherever possible, so that the highest standard of quality of the product in question was always obtained and the most effectual labor-saving methods employed, as by the utilization of machinery.

More or less detailed experiments were made with the five species of drug plants which were most important and most likely to be adapted to the state of Pennsylvania. Practical and the scientific considerations were constantly carried on. The five plants considered were *Atropa belladonna, Hyoscyamus niger, Digitalis purpurea, Cannabis* and *Datura stramonium.*

Belladonna has probably received the greatest amount of consideration by investigators. It requires a long time for belladonna seeds to germinate, and since the growing season in the field is comparatively short, in order that belladonna growing should be successful, it is necessary that these plants be first developed under glass. The germination period for belladonna seeds may be from three to eight weeks, usually only a small percentage germinating in three weeks. Treating the seeds with acids, as shown by Sievers[7] and others, proved of no particular advantage. Some investigators have reported that freezing them hastened germination, while others have found such treatment to be ineffective.

As belladonna plants are grown for some time under glass, and infectious organisms as "damping-off" fungi must be guarded against, the sterilization of the soil to be used is to be recommended.[4] This not only destroys the destructive organisms but it kills weed seeds, which are always numerous. Sterilization, likewise, greatly increases the available constituents of the soil to be utilized by the growing plants.

Belladonna plants will make a very large growth in one season. If the proper care and conditions are given these plants, three pickings of leaves can be harvested. Besides the leaves and roots, it has been found[4] that the stems of belladonna plants can also be utilized. Since three crops of leaves are harvested, it is apparent that this is a vigorous grower, hence, a hearty feeder upon the soil. This being the case, sufficient plant food must always be available for the ready use of the plant. Schneider[6] states that with the particular soil used, no marked increase in yields was realized where fertilizers were applied. Carr[1] reports the contrary and the investigations carried out at our laboratories[4] show conclusively that applying complete fertilizer resulted in very marked increases, namely, 3 to $3^1/_2$ times the yield of those plants receiving no fertilizer treatments. Hence, the application of sodium nitrate, acid phosphate and potash is to be recommended.

When cultivating belladonna under Pennsylvania conditions, it is desirable to plant the seeds in sterile soil under glass about December 20th to January 1st. In about seven weeks plants will be sufficiently large for potting. In order that the cost of production be kept at the minimum, the plants need to be potted but once. Repotting into larger pots is not necessary. As soon as the weather and soil conditions permit, these plants are transplanted into the field.

In the cultivation of belladonna, an important consideration is to successfully control the attacks of insects. Practically all of those insects that are destructive to truck crops are destructive to these plants. Of the chewing insects, the Colorado potato beetle is by far the most destructive, while the green and pink aphids are the most harmful sucking insects.

Hydrocyanic acid fumigation is the most successful and desirable means of controlling all the insect pests while the plants are being propagated in the greenhouse. In the field, chewing insects can be controlled by the various arsenical spray mixtures.[4] The best of these are Paris green and arsenate of lead. For combating aphids, nicotine sulphate, otherwise known as "Blackleaf 40," has been found the most effective. All insect injury can be controlled if proper precautions are taken and the spray applied as soon as any of the destructive factors make their appearance.

In order that the resultant product of dry belladonna shall be of the best quality, the drying should be carried on under the most favorable conditions. Sievers[8] first air-dried samples of belladonna, after which the remainder of the moisture was driven off by drying in a hot air oven. Other investigators report various means of drying. The results which have been obtained at the Mulford Laboratories[4] indicate that in order to secure the most desirable product the leaves of belladonna should be dried at a temperature not above 55 to 60° C.

One reason why belladonna culture did not flourish a few years ago was because it was very difficult to secure viable seeds. Belladonna plants are very prolific seed producers and an average sized plant will easily produce an ounce of clean, dry seed. Hence, we can harvest several pounds of seed from a small number of plants. Most belladonna growers have now learned how and when to collect the seed. In growing belladonna, as with other medicinal plants, it is important to have a product with the active principle as high as possible. It is true that the alkaloidal content of two belladonna plants may be quite different, even if grown under identical conditions of temperature, moisture, soil, fertilizer treatments, etc. This difference is due to the individualism of the respective plants. In like manner the various parts of the same plant will vary greatly in activity. Still further, the leaves of the same plant will show a remarkable difference in percent of alkaloid. This variation, according to Sievers,[8] may be from 0.110 to 0.766 percent. Hence, it behooves us, in order to produce a final product of the highest activity, to select strains of plants producing the highest alkaloid content. These must be cultivated under the most favorable conditions and the crop harvested when the leaves have reached the size at which the most alkaloid is present in them and, at the same time, we get the largest yield possible.

In considering the requirement of the United States Pharmacopoeia for belladonna, a word may be said with regard to the utilization of the stems of this plant in conjunction with the leaves. Since the United States Pharmacopoeia calls for the admixture of no more than 10 percent foreign matter, which might be stems, this will not permit the utilization of all the stems in conjunction with the leaves as they exist on the plant under field conditions, as this ratio is approximately two parts of leaves to one of stems. Investigation of this matter[4] has revealed the fact that the alkaloidal content of belladonna leaves and stems used collectively in their proportion as grown in the field was considerably above the

United States Pharmacopoeia requirement. This is an important factor for practical as well as scientific consideration. It would bring into use the stems, and further, it would facilitate the harvesting, cutting and drying the crude material, and thus reduce the cost of production.

The same method of propagation under glass, germination, potting, planting, fertilization and growing in the field, which were employed in belladonna culture, can be applied in the cultivation of henbane, or *Hyoscyamus niger*, another member of the nightshade family. As henbane is more delicate, it requires a little more skill and caution than belladonna. However, if proper precautions are always taken, from a cultural standpoint, henbane can be grown as successfully in Pennsylvania as belladonna. As with all the other medicinal plants here to be considered, only one year's growth of henbane can be obtained, hence the annual variety is cultivated.

A few of the most important phases may be mentioned in the propagation and treatment of henbane. The plants should have attained considerable size—about 3 inches—before potting. Great care must be exercised when transplanting into the field as the plant should have attained a fair size. This plant does not have the massive root structure which belladonna has, consequently it is more delicate. Similar to belladonna, henbane is a vigorous feeder, hence it is most desirable to have sufficient plant food available for it during the growing season. Insects, especially the potato beetle, are very destructive to henbane. Stockberger[9,10] well expresses it when he says that "leaves of henbane usually suffer severely from attacks of the potato beetle during the first year." We[3] have found that by careful spraying of henbane plants with arsenate of lead (5 pounds to 100 gallons) the plants were able to withstand the attack of these beetles. Paris green applied in all of the ordinary concentrations proved destructive to the plant.

Henbane, like belladonna, produces many seeds. One large plant would produce sufficient seed to plant two or three acres.[3] The mydriatic alkaloid content of the leaves of the annual variety of *Hyoscyamus niger*, which was cultivated at Glenolden,[3] was 0.073 to 0.120 percent, while analysis of the roots and stems was 0.081 percent. These results compare very favorably with the United States Pharmacopoeia requirement, which is 0.065 percent.

Digitalis purpurea is a perennial plant, which was grown rather extensively in European countries and has long been grown in flower gardens in the United States as an ornamental plant. Digitalis grows wild over a very large area of western Washington and Oregon. Up to three years ago this wild plant was considered a very destructive weed, especially in pasture land, and land owners treated it as a weed, pulling out the immense stalks at blooming time, thus preventing its spreading. With the curtailment of the normal supply from abroad, and the advance in market prices paid for digitalis, this weed of the far west was carefully collected and placed upon the market.

Digitalis can be successfully grown in Pennsylvania.[5] Open, well drained soil is preferable, as it is the most natural medium for this plant, and it makes possible early planting in the field. A good crop of digitalis can be grown on a heavy clay loam soil, if sufficient plant food is available.

Probably the most important factor, in growing a successful crop of digitalis, is securing plants. Direct field sowing has not proven satisfactory.[5] Even though

the seeds of digitalis germinate rather quickly, weeds usually get the upper hand. Consequently, it is quite difficult to separate the weeds from the small digitalis plants.

Seeding small $1^3/_4$ inch pots with 6 to 8 viable seeds and allowing the plant from these to grow under glass for 7 to 8 weeks, then planting them in the field when they are from 2 to $3^1/_2$ inches high, has been found to be a most successful method. They make a very vigorous leaf growth, so that at harvesting time, which is just before the heavy frosts, a crop of from 500 to 700 pounds of dry leaves per acre can be collected, and this would be considered a satisfactory yield. Since the winters are usually quite severe in Pennsylvania—at least the soil is frozen to some depth—no attempt is made to grow digitalis as a biennial or a perennial plant. Formerly it was thought that the leaves of the second year's growth were the only ones that could be utilized in the manufacture of drugs. Experimental evidence has demonstrated the fact that the first year's growth of leaves is as active in medicinal principle as the second, hence, they are now used.

The drug plant cannabis, or *Cannabis Indica*, formerly imported, is now successfully grown here on a commercial scale. Imported Indian Cannabis was formerly thought to be the only variety suitable for use in the preparation of medicines. However, cannabis grown by scientific methods in the United States is now extensively used by American drug manufacturers. As with the other medicinal plants, the climate, season and conditions of growth affect the quality of cannabis.

Thus technical skill is necessary in order to produce cannabis of quality. Most of the cannabis culture in the United States is carried on in the Southern states, principally Kentucky and South Carolina. It can be very successfully grown in Pennsylvania. Grown under well cultivated conditions, and with plenty of available plant food, cannabis attains a remarkable height. It was not uncommon to find cannabis stalks on the Mulford Drug Farm from 9 to 10 feet in height. Harvesting such a forest of material would seem, at the outset, a somewhat difficult operation. This difficulty has, however, been conquered. The male plants are first removed, then with an ordinary corn binder the female plants are cut off as high as possible from the ground. The upper one-fourth to one-third of the female plants is then cut into small pieces with an ensilage cutter. By adopting these methods the cost of producing cannabis has been greatly reduced.

Stramonium (*Datura Stramonium*) grows as a weed in nearly all parts of the United States. While as a weed it makes considerable growth, it produces much better under cultivation. It thrives remarkably well on a heavy clay loam soil which is well supplied with manure. Under conditions of cultivation, after planting the seeds, no special care is necessary, other than occasional cultivation, before the plants have attained a too rank growth. Since it has been found[2] that the stems of stramonium, which are very pulpy and succulent, can be employed in conjunction with the leaves, and the alkaloid requirement of the U. S. P. still easily met, it has greatly facilitated the handling of this crop. The plants can be mowed with a mowing machine, ground in an ensilage cutter and then dried.

After we have carefully worked out the methods for the cultivation of these various medicinal plants, the question still presents itself, does it pay to grow these plants? First of all, in growing any crop commercially, whether it is wheat,

potatoes, apples or medicinals, there must be a market for the produce. The next factor to consider is, from which crop can we realize the greatest returns for the capital invested? Hence the grower must first acquaint himself with the market conditions and then, after careful calculation, determine which crop will be most profitable. If medicinal plants have been decided upon as the crop to be grown, and all the prerequisites, capital, market, satisfactory market price, skill, equipment, proper soil, etc., are at hand for the production of such a crop, then the grower must take into further consideration that if too many individuals engage in growing the same crop, the market price will drop below the figures on which he based his profits, and a financial loss will be the result. Under commercial conditions in order to warrant the cultivation of medicinal plants they must yield a greater return than other agricultural crops.

Five medicinal plants have been considered in this paper. Prices for the crude drug of two of them, namely, belladonna and hyoscyamus, are to-day lower by half than those paid for them in December, 1917, at which time the prices for crude drug materials had reached the high mark. We have not been importing any of these five drug plants within the last year, and our consumption—hence the demand—has been much greater than a year and a half ago. This clearly demonstrates that the United States has met the original so-called possible crude drug crisis, and all the demands have been and are being met, by products from plants grown here on a commercial scale.

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THE PREPARATION OF PHENYLCINCHONINIC ACID.*

BY EDWARD D. DAVY.

The cancelling of patent rights on synthetic preparations made in Germany and the issuance of licences to American manufacturers able to produce these

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products according to standard requirements as to physical, chemical and physiological tests, led chemists throughout the country to efforts along this line of work which heretofore had received very little attention.

The following is the result of work by the writer on phenylcinchoninic acid (former trade name Atophan), taking into account first the preparation of the products entering into it:

Benzylidin-Anilin.—This is made by mixing molecular quantities of anilin and benzaldehyde, the anilin being added slowly to the benzaldehyde. The result is the splitting off of one molecule of water when the two combine, leaving $C_6H_5N.C_6H_5CH$. It may be crystallized readily by pouring the mixture into shallow vessels, and within a few minutes crystals form and in the course of a half hour it becomes a crystalline mass from which the greater portion of the water may be poured and the rest removed by drying *in vacuo* at the temperature of the water bath. The crystallization, however, is not absolutely necessary, as the water formed will collect on the surface of the benzylidin-anilin and may be separated mechanically, the subsequent drying being done as with the crystals.

Pyroracemic or Pyruvic Acid.—This is made preferably by the destructive distillation of tartaric acid. The tartaric acid is mixed intimately with an equal weight of potassium acid sulphate and the mixture subjected to distillation at a temperature not exceeding 220° C. This is best done by the use of an oil bath, the distillation being continued four or five hours or until no more distillate is received. The process is very slow and the tartaric acid is broken down into carbon dioxide, water and pyroracemic acid, the acid being purified by redistilling from an oil bath, the portion between 130° C. and 180° C. being saved. The tendency is very strong for the acid to retain the water, some of it even above 130°, unless the distillation is conducted very slowly, raising the temperature not faster than 1° per minute from 100° C. to 130° C. The yield in acid is stated by some authorities to be 25 percent of the tartaric acid, but in working with small quantities the yield was found to be slightly below that figure.

Pyroracemic acid is a syrupy liquid, miscible with all ordinary solvents, is of light straw color and has a specific gravity of about 1.280.

A great deal of trouble was experienced in making the distillation from the tartaric acid, due to excessive foaming, and several preventive measures were tried with varying results. Cerasin was added, but owing to the extreme viscosity of the mixture it did no noticeable good. A method is suggested of charring the acid in an open vessel and after cooling the fused mass is broken into pieces and subjected to distillation. This plan has objectionable features owing to the loss of pyroracemic acid during the charring. Another effective means was tried, that of continuous stirring in the flask until it became charred after which it boiled quietly. This was attended with less loss of acid, as the greater portion condensed on the sides and neck of the flask while the water with a lower boiling point passed off. It is quite possible that a mechanical stirrer within the distilling chamber might be used with success in making distillations in large quantity.

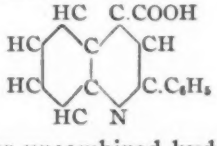
It was first thought that the presence of carbon was the chief factor in allaying the foaming, but on using the same potassium acid sulphate repeatedly, and which carried with it considerable carbon, no decrease was noted, so it is concluded that the formation of water in the decomposition of the tartaric acid is directly

responsible. The use of fused potassium acid sulphate tends to lessen the foaming, but does not eliminate it.

The method for the combination of these products is the same as that outlined in the patent which follows: According to this invention 2-phenyl-quinolin-4-carboxylic acid is made by boiling an alcoholic solution of benzylidin-anilin and gradually adding pyroracemic acid to the boiling solution. From the rather indefinite statements regarding the percentage yield it would seem that the latest patentees obtained a yield of about 135 percent of the pyroracemic acid used. By the above process I obtained a yield of 85 percent in one case and 90 percent in another, the variation being due largely to the presence of water in the pyroracemic acid used as otherwise the experiments were carried out under the same conditions.

Procedure.—The benzylidin-anilin is boiled in dehydrated alcohol (reflux condenser) for fifteen or twenty minutes and the pyroracemic acid added slowly to the boiling solution. The mixture assumes a cherry-red color and should be boiled for about two hours after all the acid is added. The excess alcohol is then distilled from the mixture until a portion of the phenylcinchoninic acid is noticeably separated, after which the mixture is cooled as rapidly as possible, then placed in an ice bath, when it becomes a crystalline mass. Cold alcohol is then added, after which it is filtered with suction and washed with cold alcohol or ether until the tarry matter is completely removed. The use of ether as the final wash liquid facilitates the drying of the crystals, the tarry residue being very soluble in it. The residue is spoken of in the patent as "residue insoluble in soda lye," but it may as well have been spoken of as insoluble in acids, as it is insoluble in either strong acids or alkalies and might well be used as a varnish for laboratory ware on which acids or alkalies have a corrosive action.

Pyroracemic or acetyl formic acid, $CH_3.CO.COOH$, combines with the benzylidin-anilin to form phenylcinchoninic acid, $C_6H_5.C_9H_5N.COOH$, which is, as stated, 2-phenylquinolin-4-carboxylic acid,



Inasmuch as there are four uncombined hydrogens as a result of this union, it is quite probable that the acid acts as an oxidizing agent, thereby eliminating it.

The Ninth Revision of the United States Pharmacopoeia states that the melting point should be about 210° C., but samples of Atophan taken from the open market had melting points from 208° to 209° C., corrected. It was found that the presence of water in the pyroracemic acid materially lowers the melting point and the product on melting decomposes at a lower temperature (noted by darkening). On observing the aforenoted precautions in redistilling the acid to eliminate the water a product was obtained with a melting point of 209.5° C. and no noticeable decomposition at its melting point.

In summing up the difficulties encountered it might be said that the destructive distillation of the tartaric acid and the subsequent distillation of the pyroracemic acid to eliminate the water were the chief ones.

THE MANUFACTURE OF ACETPHENETIDIN.*

BY WILLIAM A. KONANTZ.[1]

HISTORICAL REVIEW.

1. WORK OF HALLOCK.

Acetphenetidin was probably first made by the American chemist, E. J. Hallock,[2] in 1879, while investigating the properties of the mono-nitrophenetols ($NO_2.C_6H_4.OC_2H_5$) and some of their derivatives. Hallock treated *p*-aminophenetol ($NH_2.C_6H_4.OC_2H_5$) with acetyl chloride and observed that "this oil combines, like aniline, directly with acetyl chloride to form a crystalline solid." This crystalline solid must have been crude acetphenetidin; unfortunately, however, Hallock did not isolate it in the pure state and determine its physical properties and chemical constitution. He contributed practically nothing to our knowledge of the compound, and therefore he is not commonly regarded as the discoverer of acetphenetidin. His preparation of the crystalline solid is usually considered as merely the result of a test which he applied to confirm the presence of an amino group in *p*-aminophenetol, and not as a positive discovery of a new substance.

The method by which Hallock arrived at his crystalline solid has no value for the commercial synthesis of acetphenetidin; it is, however, of historical interest and deserves description. Pure phenetol ($C_6H_5.OC_2H_5$), or a solution of phenetol in acetic acid, was treated with fuming nitric acid, and the resulting dark red, viscous liquid distilled in a current of steam. The product consisted of a solid and a liquid in varying proportions according to the conditions of nitration. The solid, which was found to be *p*-nitrophenetol, was purified by repeated crystallization both from acid and from alcohol. Hallock also prepared *p*-nitrophenetol by the action of potassium ethyl sulphate and potassium hydroxide on *p*-nitrophenol in sealed tubes at high temperatures, and by heating ethyl iodide and potassium hydroxide with *p*-nitrophenol under the same conditions. The *p*-nitrophenetol obtained by these methods he reduced to *p*-aminophenetol by means of tin and hydrochloric acid. The resulting salt, after the removal of the tin with hydrogen sulphide, crystallized in rhombic plates of a pearly lustre. These crystals were treated with potassium hydroxide, when the free base was obtained as an oily liquid resembling aniline. Hallock's conversion of this base into acetphenetidin by means of acetyl chloride has been described. In his original paper, and also in a paper published two years later, Hallock[3] stated that the yields of *p*-nitrophenetol and *p*-aminophenetol which he obtained by these methods were very poor.

2. WORK OF HINSBERG.

The credit for the discovery of acetphenetidin is usually given to the German chemist, Oscar Hinsberg, who was the first to determine its chemical constitution, physical properties, and medicinal action. Hinsberg was led to his discovery by a consideration of the work of Fischer and Skraup and of Cahn and Hepp.[4]

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* Contribution from the Graduate College of the State University of Iowa.

[1] Research assistant 1917–18 in the College of Pharmacy of the State University of Iowa.

[2] *Am. Chem. J.*, 1, 271, 1879.

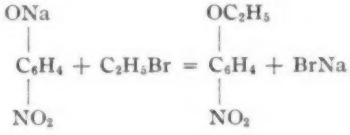
[3] *Ber.*, 14, 37, 1881.

[4] *Z. angew. Chem.*, 26, 158, 1913.

Fischer and Skraup had found that phenolic hydroxyl groups and their ethers produce antipyretic and analgesic effects, while the experiments of Cahn and Hepp[5] had proved that acetanilid is an antipyretic and analgesic of great power. Scmiedeberg[6] had also shown that aniline and its simple derivatives are partially converted by the organism into *p*-aminophenol. Knowing these facts and wishing to overcome the toxic action of acetanilid, Hinsberg conceived the idea of introducing into the molecule of acetanilid an alkoxyl group. One of the results of this idea was the discovery of acetphenetidin in 1886. Associated with Hinsberg were Kast, who determined the physiological action of acetphenetidin,[7] and Duisberg, director of the Farbenfabriken of Elberfeld, who made possible its production on a large scale.[8]

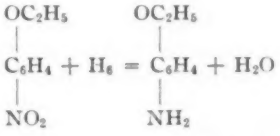
In the descriptive portion, or specification, of the United States patent[9] granted to Oscar Hinsberg and assigned to the Farbenfabriken of Elberfeld, we find the following description of the method which was first used in the commercial preparation of acetphenetidin:

"Fifty kilos of the potassium salt of paranitrophenole are mixed with three hundred kilos of alcohol, adding forty kilos of bromoethyl. The mixture is heated in an autoclave at a pressure of three to four atmospheres during about eight hours. At this time the reaction is finished, whereby paranitrophenetole is obtained according to the following equations:



"In order to separate the mononitrophenole, which has not taken any part in the process, from the ether recently formed, the solution is treated with steam. By this operation the ether distills, leaving behind the paramononitrophenole.

"For the reduction of the paranitrophenetole forty kilos of this ether are mixed with sixty kilos of muriatic acid and sixty kilos of water. To this mixture are gradually added, at a temperature of 70° C., twenty-five kilos of iron filings, the whole being stirred continually. As soon as the ether is entirely reduced, paramidophenetole is obtained, as explained by the following equation:



"The solution obtained in this manner is saturated with chalk diluted with water, and for the purification of the amido compound treated with steam the distillate is absorbed in water acidulated by muriatic acid. The muriatic salt of the paramidophenetole crystallizes in white leaves. Fifty kilos of this product are melted with one molecule of melted acetate of sodium and twenty-four kilos of glacial acetic acid. The melted mass is repeatedly boiled with water and the new monoacetylparamidophenetole obtained from the filtrates after cooling. It has the following formula:

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[5] *Z. klin. Med.*, 1886, 33; *Berl. klin. Wochschr.*, 1887, 1 and 2.

[6] *Arch. exp. Path. Pharm.*, 8, 1 (1878).

[7] *Z. Med. Wiss.*, 1887–9.

[8] *Z. angew. Chem.*, 26, 49, 158, 240, 352 (1913).

[9] U. S. Pat. No. 400,086, March 20, 1889.

$$\text{Para } C_6H_4(NH(C_2H_3O))(OC_2H_5) = C_{10}O_2H_{13}N$$

and is obtained according to the following equations:

$$\text{Para } C_6H_4(NH_2)(OC_2H_5) + CH_3COOH = C_6H_4(NHC_2H_3O)(OC_2H_5) + H_2O$$

"The monoacetylparamidophenetole crystallizes in white leaves, melting at 133° to 136° C. It is tasteless, little soluble in cold water, more so in hot water, but easily in alcohol, chloroform, benzole, etc."

The patentee claimed originality for the product but not for the process of manufacture. In fact, all the intermediates and methods described had been known to chemists for years prior to the time of application for the patent, so there was really nothing new in the process. The only useful improvement was its application on a commercial scale.[10]

Although the starting point in this synthesis is *p*-nitrophenol, no method for its production was described by the patentee. It is of interest to know that before the medicinal value of acetphenetidin was discovered, *p*-nitrophenol was a useless by-product in the manufacture of dianisidin from *o*-nitrophenol.[11] In order to complete the description of the method which was actually used in the manufacture of acetphenetidin it is necessary to add the nitration of phenol, which, according to Duisberg,[12] was carried out by the direct nitration of phenol in aqueous solution, the ortho and para nitrophenols thus formed being separated by distillation with steam, when the ortho compound passes over and the para isomer remains in the residue. The *o*-nitrophenol was used in the manufacture of dianisidin and the *p*-nitrophenol in the manufacture of acetphenetidin.

In 1889 Hinsberg[13] described two methods for the preparation of acetphenetidin which are suitable for use in the laboratory. These methods are as follows:

"The ethyl ether of *p*-nitrophenol is reduced in the usual manner by adding it to a warm mixture of tin and concentrated hydrochloric acid on the water-bath. The colorless solution is then freed from the greater part of the tin by adding sheet zinc, saturated with sodium hydroxide, and shaken out twice with ether. The ethereal solution is dried with potassium hydroxide and then distilled. The portion going over between 242–245° (unc.) is vigorously shaken in a separatory funnel with ice-water and an excess of acetic anhydride (about 1.5 molecular weights to 1 molecular weight of phenetidin). After the disappearance of the anhydride the acetphenetidin is filtered off and crystallized from diluted alcohol with the aid of animal charcoal. The phenetidin, like aniline, may also be acylated with boiling glacial acetic acid."

"To go from *p*-aminophenol, acetylaminophenol and an equivalent part of sodium hydroxide and ethyl bromide or ethyl iodide are dissolved in sufficient alcohol to form a clear solution and warmed on a water-bath for two or three hours under a reflux. On diluting the alcohol the product, in case pure acetaminophenol was used, is clean and white and usually requires no further purification."

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[10] Kebler, "Phenacetin: Methods of Analysis and Commercial Status," p. 34.

[11] *Z. angew. Chem.*, 26, 49, 1913.

[12] *Ibid.*, 26, 240, 1913.

[13] *Ann.*, 305, 276, 1899.

3. WORK OF RIEDEL.

In 1888 J. D. Riedel obtained a German patent[14] on a process for making *p*-aminophenetol, which he stated was serviceable in the manufacture of acetphenetidin. In this process one molecule of *p*-nitrophenol is ingeniously made to furnish a large number of molecules of acetphenetidin. The process seems to have been used on a commercial scale because *p*-nitrophenol was rather difficult to obtain in pure condition by the nitration of phenol, and because the cost of production of acetphenetidin was dependent on the utilization of the *o*-nitrophenol as dianisidin or in some other way.[15] The details of the method as described in the patent-specification are as follows:

"A solution of 150 grammes of para-amidophenetol and 380 cc. of 20 percent hydrochloric acid in 2200 cc. of cold water, is diazotized by adding, with cooling, a solution of 70 grammes of sodium nitrite in 550 cc. of water. The solution of the diazo compound thus formed is poured into a solution of 104 grammes of phenol and 220 grammes of sodium carbonate in 400 cc. of water. After one hour the ethyl-dihydroxy-azobenzene separates out quantitatively. After filtering from the liquid portion it may be recrystallized from dilute alcohol.

"100 grammes of dry ethyl-dihydroxy-azobenzene and 17 grammes of sodium hydroxide are dissolved in 500 cc. of alcohol, 46 grammes of ethyl bromide are then added and the solution heated in an iron autoclave for ten hours at 150° C. After distilling off the alcohol the sodium bromide is extracted from the residue with water and any unchanged ethyl-dihydroxy-azobenzene with dilute sodium hydroxide solution. The residue, diethyl-dihydroxy-azobenzene, is crystallized from alcohol.

"70 grammes of stannous chloride are dissolved in 300 cc. of concentrated hydrochloric acid, to this solution 100 grammes of diethyl-dihydroxy-azobenzene are added, and the mixture warmed gradually on the water-bath. As soon as the diethyl-dihydroxy-azobenzene is dissolved the mixture is rendered alkaline with 180 grammes of sodium hydroxide, and the para-amidophenetol distilled off with superheated steam."

The *p*-aminophenetol obtained in this way can be converted into acetphenetidin by acetylation or can be made to yield a double quantity of *p*-aminophenetol by repeating the above-described process of diazotizing and coupling with phenol.

The following equations illustrate the successive steps involved in the manufacture of acetphenetidin by this process:

1. $C_2H_5O.C_6H_4.NH_2 + HCl + NaNO_2 = C_2H_5O.C_6H_4.N_2Cl + NaCl + 2H_2O.$
p-aminophenetol — phenetol-diazo-chloride

2. $C_2H_5O.C_6H_4.N_2Cl + Na_2CO_3 + C_6H_5OH = C_2H_5O.C_6H_4.N_2.C_6H_4.OH + NaHCO_3 + NaCl + H_2O.$
phenetol-diazo-chloride — phenol — ethyl-dihydroxy-azobenzene

3. $C_2H_5O.C_6H_4.N_2.C_6H_4.OH + NaOH + C_2H_5Br = C_2H_5O.C_6H_4N_2.C_6H_4.OC_2H_5 + NaBr + H_2O.$
ethyl-dihydroxy-azobenzene — ethyl bromide — diethyl-dihydroxy-azobenzene

4. $C_2H_5O.C_6H_4N_2.C_6H_4.OC_2H_5 + 2SnCl_2 + 4HCl = 2C_2H_5O.C_6H_4.NH_2 + 2SnCl_4.$
diethyl-dihydroxy-azobenzene — *p*-aminophenetol

5. $C_2H_5O.C_6H_4.NH_2 + CH_3.COOH = C_2H_5O.C_6H_4.NH_2.OC.CH_3 + H_2O.$
p-aminophenetol — acetic acid — acetophenetidin

4. WORK OF PLATT.

In 1893 Charles Platt[16] described the method of manufacturing acetphenetidin as follows:

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[14] *D. R. P.* No. 48,543, Dec. 28, 1888; *Frdl.* II, 526.

[15] May, "The Chemistry of Synthetic Drugs," p. 71.

[16] *J. Anal. Appl. Chem.*, 7, 77, 1893.

"There are four steps involved in the preparation of phenacetin from phenol, which is the starting-point in its manufacture, and these, though simple, require care and attention, that the resulting drug may be of the requisite purity. First, the phenol is converted to nitrophenol by gradually adding it (one part) to two of nitric acid in four of water. An oil separates which is washed and distilled with steam, when the volatile ortho-nitrophenol distills over, leaving the non-volatile para-nitrophenol as a residue.

$$C_6H_5OH + HNO_3 = C_6H_4(NO_2)OH + H_2O.$$

"In the second step the ethyl radical, C_2H_5, is substituted in the hydroxyl group of the nitrophenol by treatment with ethyl iodide forming ethyl nitrophenol.

$$C_6H_4(NO_2)OH + C_2H_5I = C_6H_4(NO_2)OC_2H_5 + HI.$$

"The third step consists in treatment with sodium-amalgam, whereby the nitro radical of the ethyl nitrophenol is reduced to amidogen with the formation of phenetidin.

$$C_6H_4(NO_2)OC_2H_5 + 3H_2 = C_6H_4(NH_2)OC_2H_5 + H_2O.$$

"The final step is the treatment of phenetidin with anhydrous acetic acid, then substituting the radical C_2H_3O for one atom of hydrogen in the amidogen group.

$$C_6H_4(NH_2)OC_2H_5 + C_2H_5OOH = C_6H_4(OC_2H_5)NHC_2H_3O + H_2O."$$

It will be observed that this description is quite general; it is typical of the descriptions which are given to this day in most text-books and reference-books concerning the method by which acetphenetidin is made commercially. The most valuable part of Platt's paper is that which treats of the qualitative examination of acetphenetidin, many tests being given for its identification and the determination of its purity.

5. WORK OF TÄUBER.

In 1878 H. N. Morse[17] reported that when *p*-nitrophenol is reduced with tin and glacial acetic acid, instead of obtaining the acetic acid salt of *p*-aminophenol, one obtains the acetyl derivative, $HO.C_6H_4.NH.OC.CH_3$. In 1894 E. Täuber was granted a German patent[18] on a process that converts this chemical into acetphenetidin. The process is described as follows:

"Mix 150 grammes of *p*-acetamidophenol, 165 grammes of potassium ethyl sulphate, and 40 grammes of sodium hydroxide (dissolved in 500 cc. of 60 percent alcohol) in an autoclave and heat the mixture for four hours at 150° C. On diluting the resulting solution with three parts of water the phenacetin separates out in fairly pure crystals."

It should be noted that this process is practically identical with one described by Hinsberg in 1889 (see Section 2).

6. WORK OF PAUL.

In 1896 Ludwig Paul[19] published an article on the technical applications of ortho and para nitrophenol, in which he described in some detail the different steps in the manufacture of acetphenetidin. The following paragraphs are quoted from his article:

"By the nitration of phenol there are formed, as is well known, two isomeric mononitrocompounds, *o*-nitrophenol, long, sulphur-yellow needles of a disagreeable odor, and *p*-nitrophenol, prismatic crystals of a faintly yellow to brown color according to their purity, possessing only a very faint odor.

"Their essential and, for the technical separation, valuable distinction, however, lies in their different behavior toward water-vapor.

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[17] *Ber.*, 11, 232, 1878.

[18] *D. R. P.* No. 85,988, June 19, 1894.

[19] *Z. angew. Chem.*, 1896, 587.

"Only the *o*-nitrophenol distills over with this, and in such purity, indeed, that it is suitable without further treatment for conversion into *o*-nitroanisol or dianisidin.

"On the other hand the *p*-nitrophenol remains behind as a crystalline mass mixed with tarry substances, from which it can be freed by repeated recrystallization from a small amount of naphtha."

"1. Purification of *p*-nitrophenol: 800 grammes of crude *p*-nitrophenol are dissolved in 8 to 10 liters of water with the addition of 250 grammes of chalk, and heated by passing in steam. The mixture is then filtered and 200 grammes of sodium carbonate and 5 kilos of salt added to the filtrate. After again filtering there crystallizes 950 grammes of the pure sodium salt of *p*-nitrophenol.

"2. Para-nitrophenetol: 480 grammes of the pure sodium salt of *p*-nitrophenol, 3120 grammes of denatured alcohol, 300 grammes of ethyl bromide (crude) and 100 grammes of sodium carbonate are heated under a reflux condenser for about 10 hours. The contents of the vessel are then cooled, the solid *p*-nitrophenetol filtered off, and, in order to separate any unchanged *p*-nitrophenol, washed with water until the washings are only faintly colored yellow. For complete purification the crude *p*-nitrophenetol is recrystallized from about 3 parts of alcohol, from which it is obtained in large, faintly yellow colored prisms, which melt at 56–57°.

"The yield amounts to 340 grammes, corresponding to 68 percent of the theory, according to which 499 grammes should be obtained. 22 percent of the *p*-nitrophenol remains unaltered, the greater part of which can be recovered from the mother liquor by evaporating and acidifying.

"3. Para-amidophenetol: 212 grammes of *p*-nitrophenetol are gradually added to a solution of 848 grammes of stannous chloride in 1060 grammes of hydrochloric acid, warmed to 50–60°. The reaction which ensues is a rather vigorous one, and is rendered complete by heating.

"When the reaction is ended, 250 grammes more of hydrochloric acid are added. After standing 12 hours the crystals of *p*-amidophenetol are filtered off, and, in order to free them completely of adhering tin, dissolved in 0.75 liter of hot water with the addition of 100 grammes of hydrochloric acid. Into this solution sheet-zinc is introduced until all the adhering tin is precipitated. After filtering the colorless solution and extracting the tin residue, a further addition of 100 grammes of hydrochloric acid is made. One obtains 140 grammes of the hydrochloride of *p*-aminophenetol, colorless prismatic crystals, 1 cc. long, corresponding to 64 percent of the theory.

"4. Phenacetin: Since the following-described experiment with 15 grammes of *p*-aminophenetol hydrochloride gave a yield of 75–90 percent of phenacetin, and by considering the amidophenetol recovered even the theoretical yield, further experiments would have been useless.

"16.7 grammes of the hydrochloride of *p*-aminophenetol, 8.7 grammes of dry sodium acetate, and 8.3 grammes of glacial acetic acid were heated under a reflux condenser for about 3 hours. The acetic acid solution was then dissolved in 10 parts of boiling water, and freed from resinous by-products by filtering. After cooling the phenacetin crystallizes out with a faint reddish color. By recrystallization from water with the aid of animal charcoal one obtains 15 grammes of phenacetin in the form of small, perlaceous, glistening flakes. The yield corresponds to 90 percent of the theory."

This method, it will be seen, is practically the same as that described by Hinsberg (see Section 2).

7. WORK OF KLIMMEK.

In 1898 United States letters-patent[20] were granted to Otto Klimmek of Chicago, Illinois, on the product oxyethylacetanilid, which is identical with acetphenetidin, and on a process of making the same from *p*-aminophenetol. This patent was subsequently found to be invalid. In the patent-specification we find the following description of the product and the method, both of which the patentee claimed were his inventions:

[20] U. S. Pat. No. 606,288, June 28, 1898.

"In carrying out the process of manufacture I add to the paramidophenetol one molecule of glacial acetic acid. The mass is placed in a flask having a return-condenser and maintained at a temperature of 100° C. in a water-bath for from four to five hours. This solution is then thrown into eighty parts of boiling water and maintained at the boiling-point for a few minutes, a sufficient quantity of animal charcoal having been added to secure on filtration a perfectly clear liquid. The solution is now filtered while hot and allowed to crystallize rapidly. The large volume of water above mentioned thoroughly dissolves the solids, so that all of the impurities and coloring-matter are absorbed by the charcoal. The resulting product, oxyethylacetanilid, having the formula $C_{10}H_{13}NO_2$ (1:4), after being separated from the water is a solid composed of very small, lustrous crystals taking the form of scales. It is white, very light and 'fluffy,' soft or velvety to the touch, and is tasteless. It is almost insoluble in cold water. In boiling water when agitated it dissolves readily."

8. DISCUSSION.

From a review of the work which has been published on the manufacture of acetphenetidin one can obtain a general idea of the processes which have been found technically useful; however, these processes lack the quantitative data which would enable one to determine their relative value.

The process most often referred to, and no doubt the one most largely used in practice, at least in the beginning, is that of Hinsberg, based on the scheme: phenol ⟶ *p*-nitrophenol ⟶ *p*-nitrophenetol ⟶ *p*-aminophenetol ⟶ acetphenetidin. The chief disadvantage of this synthesis is the fact that it is quite difficult to obtain a good yield of *p*-nitrophenol in pure condition by the direct nitration of phenol, for *o*-nitrophenol is the chief product, and the *p*-nitrophenol is invariably mixed with tarry substances which are troublesome to remove. The process is not altogether satisfactory because the cost of production depends to a great extent on the ease with which the *o*-nitrophenol can be disposed of and its value; thus acetphenetidin becomes the by-product instead of the main product as is desired.

This disadvantage is not overcome by the Täuber method, as its starting-point is likewise *p*-nitrophenol. The only advantage of the Täuber method seems to be that both the reduction and the acetylation are performed in one operation. It is probable, however, that this advantage is overcome by the cost of the materials required to effect the double change.

The only process which does not start with *p*-nitrophenol, and which therefore obviates the chief disadvantage of these other processes, is that of Riedel, and it might seem that this process would be chosen for the manufacture of acetphenetidin. It is conceivable, however, that the process might, in spite of its freedom from side reactions, fail in one particular, that of the cost of production, since many materials are used which are quite expensive from the technical point of view.

It is evident that our knowledge of the details of the different processes, and their possibilities of improvement, is very limited. In order to obtain a more thorough knowledge of these things this research was undertaken and the phases of the individual syntheses systematically investigated.

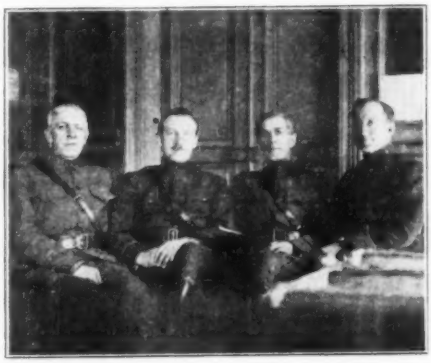
(To be concluded in next number.)

THE AMERICAN RED CROSS PHARMACY IN PARIS.*

BY GEORGE LAWRENCE BURROUGHS.

General Nature of Work Conducted.—The Section of Hospital Supplies has charge of the receipt, storage and issuance of all technical, medical and surgical supplies. This includes drugs, surgical and dental instruments, X-ray apparatus, anesthetics, biological products, hospital accessories and a laboratory for the manufacture of pharmaceuticals.

Location of Section.—The Section is a headquarters activity, operating as a sub-division of the Department of Requirements, reporting to the Director of the Department, and receiving its requisitions for supplies from the Medical and Surgical Department. All the warehouses of the Section are located in or near Paris, shipments of supplies being made direct to A. E. F. activities or to Zone warehouses in which there is located a pharmacist to oversee the local distribution of the supplies.



Staff of A. R. C. Pharmacy. Left to right: Major Geo. L. Burroughs, Captain Frank E. Norton, Captain Allen R. Bishop, Captain Charles G. Shedd.

Laboratory of A. R. C. Pharmacy, 12 rue de Tilsitt, Paris, France.

The number of the personnel employed in the Section has averaged forty-one, the lowest number employed being twenty-three and the highest fifty-nine. This average does not include the time between January 10 and June 17, 1917, when only the Pharmacy was operating. During that period there was an average of fourteen personnel who worked fifteen hours daily, Sundays and holidays included, in their efforts that orders for supplies should be promptly filled.

Growth of Section.—In the fall of 1917 the Medical and Surgical Department, realizing the immense importance to the A. E. F., the handling of medical supplies was destined to become, decided that the supplies should be segregated and under the charge of an experienced pharmacist with executive ability, who understood the work to be performed and the necessary care to be used in the handling of such articles as would in the hands of untrained persons be liable to produce injury.

The hotel at 10–12 rue de Tilsitt was leased, as the rooms were admirably suited for the storing of drugs and surgical instruments, owing to the possibility of keeping an even temperature throughout the building. These rooms were

* Passed as censored and contributed to the JOURNAL A. PH. A.

fitted with a shelving arrangement to hold an enormous stock of supplies and yet have each item so accessible that it could be obtained without any loss of time; the entire arrangement reflected that these supplies are primarily intended for the quick emergency work arising through the sudden shifting of Army units. That this arrangement was properly conceived is proven by the records of the Section in having filled fifty-six requisitions in one day, and during the past ten months it has been the proud boast of the Section that each night has seen the day's requisitions filled.

Warehouses of the Section.—The headquarters of the Section is located at 10 rue de Tilsitt and is generally known as the A. R. C. Pharmacy. The building, formerly an apartment hotel, was leased in January, 1918, and commenced its activities the first week by issuing supplies through the French Hospital Supply Service at 20 rue Troyon. This arrangement with rue Troyon was continued during the first five months, for all rail shipments, but ninety percent of the deliveries were made direct from the Pharmacy through camion service.

The basement of the building is used for receiving, packing and shipping; probably seventy-five percent of all supplies issued by the Section has passed through these rooms.

On the first floor are located the general offices of the Section and in the various rooms the drugs and antiseptics are stored.

The rooms of the second floor contain the dental supplies, surgical instruments, rubber goods, sutures, serums and laboratory equipment.

With a well organized force, each department is in charge of a man fitted by previous training for the handling of supplies under his care; pharmacists for the laboratory and drug department; a dental and surgical instrument man of over twenty years' experience in this line of work, supervising the instrument department; the hospital accessories and X-ray apparatus in charge of an experienced hospital superintendent, and the shipping looked after by a man to whose competency is due, in no small measure, the prompt issuance of supplies.

The rooms, nineteen in all, are numbered, the sections lettered, and the compartments in each section again numbered, making it possible even by the dim light permitted during the night air raids to locate the items wanted.

A well equipped laboratory was established at 12 rue de Tilsitt for the manufacture of pharmaceuticals, the packing of them in convenient sizes, and of drugs purchased in bulk. This laboratory has been a valuable adjunct to the Pharmacy and has paid for its equipment several times over. The laboratory was not only the means of a large financial saving, but it enabled the delivery within a few hours of many preparations which otherwise would be delayed from two to six weeks, if obtained from local houses.

In this laboratory all the tablets supplied during the first three months were made, and such preparations of the U. S. P. and N. F., with which American doctors are more familiar and which differ in their composition from those of the Codex, are still being compounded.

By June the operations of the Pharmacy had reached a stage of such importance that the Section of Hospital Supplies was created. The warehouses at

25 rue de Villejust and 17 rue Pierre Charron were added to the Pharmacy and all supplies pertaining to the Section were transferred to these three warehouses. Previous to this the supplies had been scattered in various warehouses of the Section of Stores, making it practically impossible to know the amount of reserve stock on hand, as the Pharmacy had no information on stock outside its own warehouse.

In August the distribution of all alcohol and ether was assumed by the Section, and the Bureau of Manufacture commenced to issue its tanks of nitrous oxide and oxygen through the service of Hospital Supplies. This large addition of stock necessitated more space. The powder magazine of Fort D'Ivry and the riding academy at 12 rue Duphot were therefore loaned to the Section through the courtesy of the French authorities, both properties being free of rental charges. The three warehouses—Fort D'Ivry, 17 rue Pierre Charron and 12 rue Duphot—are used entirely for reserve stock. All the receiving, assembling and shipping are carried on at 10 rue de Tilsitt and 25 rue de Villejust.

Material Furnished.—To give an itemized account of material furnished would involve so many varieties of articles that it would be tiresome in the extreme. An idea may be gained of the work by the following amounts issued during the past six months—July 1, 1918, to January 1, 1919; in this are consolidated all the supplies under a few brief headings:

Drugs	75,016 lbs.	Rubber Gloves	15,108 prs.
Tablets	3,954,178	Dental Supplies	4,517 articles
Serums	21,566 vials	Sutures	73,404 tubes
Laboratory Reagents	1,252 lbs.	Goggles	2,158
Laboratory Equipment	21,766 articles	Rubber Tubing	111,463 feet
Microscopic Stains	4,520 grammes	Rubber Sheeting	38,517 feet
Surgical Instruments	69,477	Adhesive Plaster	22,059 feet
Surgical Units	271	Hospital Accessories	68,697 articles
Syringes	14,044	Oil Silk	4,920 feet
Surgical Needles	30,690	Bottles	9,996

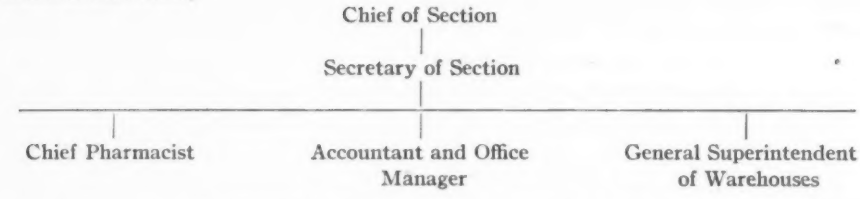
and also the hundreds of tanks of nitrous oxide and oxygen, the records of which are in the Bureau of Manufactures.

An idea of the growth of the Section may be obtained by the increase in the variety of articles carried in stock as shown in the following table taken from the inventory of May 1, 1918, and that of January 1, 1919:

	Number of kinds in stock May 1, 1918.	Number of kinds in stock January 1, 1919.
Drugs	277	648
Surgical Instruments	252	396
Dental Supplies	27	204
Laboratory Equipment	51	209
Hospital Accessories	0	142
Oxygen and Nitrous Oxide Tanks	0	21
	607	1620

The value of the stock fluctuates rapidly, owing to the variations between receipts and shipments, but the average value of the entire stock for insurance has been 9,000,000 francs.

ORGANIZATION;



The Secretary has charge of all correspondence of the Section, supervises the making out of assembly orders and distribution sheets, requisitions for supplies and orders for transfer of material between the warehouses.

The Chief Pharmacist is responsible for the filling of all assembly orders. All technical employees are subject to his authority and in the absence of the Chief of the Section he takes charge of the headquarters.

The General Superintendent of Warehouses takes care of the receiving, shipping and storage of supplies subject to the advice of the Chief Pharmacist. He has charge of the movement of supplies outside the Section, and of the camion service for the Section.

The Accountant, working with the advice of the Comptroller at General Headquarters, is responsible for all funds of the Section. He has charge of the pricing of inventories and invoices of supplies to consignees. The management of the offices and all the personnel of the Section are in his care, subject to the approval of the Chief.

Necessity for the Section.—The necessity for the Section is quite obvious. The handling of drugs and many surgical instruments is strictly regulated by law during peace. If the public health service of civilized nations has found it a necessary precaution in times of peace, these regulations should be even more rigidly enforced during a condition of war.

The importance of medical and surgical supply service can hardly be exaggerated, and the purchase, manufacture and distribution of these supplies should be in charge of a technically trained and experienced person in order that the highest degree of efficiency in the work be given.

The pharmacist being technically trained and also a business man of no small ability is best qualified to have charge of hospital supplies. He is acquainted with the conditions necessary for the proper storing of perishable stock, the varied amounts of stock necessary to carry according to the probable demand, what supplies require conserving and whether other articles could safely be used to replace those temporarily out of the market.

It is quite simple to estimate the number of shoes, hats, food supply, etc. for one thousand or ten thousand men, but it is much more complex to estimate the quantities of the thousand varieties of medical supplies, varying as they do with the kinds of cases treated in each hospital, the illnesses prevalent in the zone and even with the weather conditions.

The drugs must be properly labeled, their quality and nature verified. There must be maintained a checking system that will prevent error of sending the wrong package. In the A. R. C. Pharmacy each item is checked three times to prevent the human element of mistakes which are always liable to occur, and on several occasions this proved a most fortunate system. During all the rush work

of filling orders for waiting messengers we have yet to find a single case of sending out the wrong supplies. Several cases of goods have been received and were found to be mislabeled or to contain mixed supplies, such as vials of veterinary antitetanic serum with vials of mixed typhoid; asafoetida pills labeled "quinine" and even Linimentum Saponis labeled "Potassium Iodide." These errors were probably due to the shortage of experienced assistants in the manufacturing houses, due in turn to so many pharmacists being engaged in war work.

Without a Section of Hospital Supplies, considerable wastage of material might be occasioned by improper storage and also by unfamiliarity with the various names of the supplies. Many articles might be reported not in stock and purchase orders made when there would be a sufficient supply on hand under other names than the ones called for on requisitions. All such errors are practically impossible with this Section, as each requisition is passed on by a person familiar with all the synonyms of the articles in his department, and whose duty it is to know what there is on hand that could be used in place of the desired articles, and if it would be acceptable to the consignee, before a purchase order is made out. This applies not only to drugs but to many surgical instruments and accessories.

Emergency Service.—The personnel of the Section of Hospital Supplies is in the position of the stoker on a battleship; while the battle rages above he neither hears nor sees it, but he knows that on his efforts depend the manoeuvering of the ship and the succcess of the battle. So with the Section of Hospital Supplies; the men have not the added stimulant of the field workers in being in the forefront and seeing the actual results of their labor. These men never see the moving troops nor hear the roar of cannon, but with a true patriotic devotion they work unceasingly night and day in order that the pain of wounds may be relieved and the wounds cared for. Food and clothing may be and often are delayed for days, but anesthetics, antiseptics, and all medical supplies must be delivered immediately or lives will be lost that might have been saved. For this reason the Section of Hospital Supplies knows no difference between night and day. Weekday, Sunday and holiday are all the same to them in their efforts to get the supplies quickly to the medical corps and enable the surgeon to save the lives of wounded men. To their efforts many hundreds of men owe their lives, but it will be for the field worker to tell of the numerous times in which the antiseptics, the sutures and surgical instruments arrived at the place where needed, and the many times when, the regular source of supply being cut off, the A. R. C. Pharmacy stepped promptly into the breach and filled the emergency call. The reputation of the Pharmacy for dependability was early established, and was maintained throughout the entire period of active warfare, and how well it met the many calls upon it during the retirement of our armies in March, May and June, and again in the advance of July, will be testified to by the Medical and Surgical Department, through which the requisitions are received and by which their distribution is directed.

During the trying days of the three enemy offensives, the effectiveness of the arrangement for emergency work was thoroughly tested and was equal to every demand put upon it. Though greatly handicapped by the small number of its force, which at this period was only fourteen, without thought of sleep a force of four worked continuously for periods of thirty to forty hours assembling, pack-

ing and loading the cases into the ambulances, camions and staff cars—on one occasion the car of the Commissioner for France was used in the early morning hours to hurry the much needed supplies to the battle line.

Requisitions.—A large percentage of requisitions has been rush orders received by telephone and delivered to the camions calling for the supplies a few hours later. Shipments by rail were made as quickly as the transport orders could be arranged. In the following table it is the orders for shipments by rail received during the last few days of the month which appear as undelivered during the month received, making the deliveries in August, November and December exceed the requisitions received:

Month, 1918.	Requisitions received.	Requisitions delivered.
January and February	42	42
March	79	79
April	133	133
May	137	137
June	336	336
July	486	464
August	494	506
September	529	523
October	682	605
November	409	419
December	384	417

The following table shows the days on which the greatest number of requisitions were received:

June 13, 14, 15	total 57	September 27	42
July 13	28	October 3	46
July 16	22	October 4	41
July 17	25	October 12	53
July 18	28	October 25	56
July 20	34	October 29	43
August 1	39	November 4	38

Every order received on these days was either shipped the same day or was ready packed, awaiting transportation.

The units served may be illustrated by the distribution of requisitions for October, November and December:

	October.	November.	December.
U. S. Army and Navy	62	72	39
A. R. C. Hospitals and Dispensaries	345	242	175
A. R. C. Warehouses	79	13	15
French Hospital Supply Service	163	0	6
French Hospitals	8	61	48
British Hospitals	3	6	1
Belgian Commission	7	3	1
Polish Army	1	3	2
Rome Commission	1	0	0
Switzerland Commission	1	0	0
Miscellaneous Units in France	12	9	4
Balkan Commission	0	0	69
Montenegro Commission	0	0	8
Tchecho Slovaque Commission	0	0	3
Palestine Commission	0	0	1
Greek Commission	0	0	2
Col. House—Peace Commission	0	0	12

An example of how quickly orders are filled may be given from a recent experience, when at five o'clock in the afternoon a rush order was telephoned to make up six camionette units of emergency supplies for relief work on the returning exprisoners who were in desperate need of medical attention. This entire order, making approximately half a ton of assorted supplies to each load, was assembled, packed, each unit numbered, and a list of the contents made of each case, ready and awaiting the camionettes at half past six o'clock.

One of the great aids in filling emergency orders has been the so-called "Burlingame Unit," which was made up by the Pharmacy force. It consisted of all the surgical instruments, sutures, antiseptics and drugs necessary for a surgeon's use in treating five hundred cases. This unit has been carried on hand at the Pharmacy, ready packed for immediate delivery.

Instances such as the above could have been enumerated many times, as the Section of Hospital Supplies has at all times given of its best efforts to coöperate with the Medical and Surgical Section in making the American Red Cross Service all that the American people demanded.

Despite the arduous duties of their own section, when in March the call came for assistance in caring for refugees, the men of this Section volunteered for night work in this relief and several of them served at the railroad station until midnight during that week. Again in July, when wounded men were arriving in Paris in large numbers, our personnel assisted in the receiving and undressing of these patients at the hospital.

To work in the Section of Hospital Supplies has been a privilege greatly appreciated and an honor highly prized by all the personnel, in whom there is established a feeling of pride amply justified by the record of their achievement in maintaining the honor and reputation of the American Red Cross in its greatest humanitarian work—saving the lives of sick and wounded.

The Section is still one of the most active in the organization and daily the loaded camions leave its office with the medical supplies for all parts of Europe.

EBERT-HALLBERG-OLDBERG.*

BY HENRY M. WHELPLEY.

The Ebert-Hallberg-Oldberg pharmacy period of Chicago, Illinois, the Middle West and in a way of the entire country, stands out with increasing prominence as time passes and we gain the advantage of perspective.

Each one of these three men was sufficiently strong in character, active in work and efficient in accomplishments to place a city even of the size of Chicago on the pharmaceutical map and keep it there during decades of subsequent history. The co-existence of the three is a remarkable circumstance. It was not, however, mutual affinity that brought them together. It is with some hesitation that I hyphenate the three names for this sketch. They are euphonius enough as I say, "Ebert-Hallberg-Oldberg," and I hope the echo will not disturb their peaceful and well-earned "rest beyond."

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* An address, illustrated with lantern slides, before the Section on Historical Interests, A. Ph. A., Chicago meeting, 1918.

In spite of their friction and lost motion, each one devoted his life to the common cause of better pharmacy. The Chicago period, marked by the subjects of this sketch, began in the early forties, when Albert Ethelbert Ebert, a child of one year, came with his parents to the new town, Chicago. At the age of thirteen years, in October, 1853, he apprenticed to the drug firm, F. Scammon & Co., of 140 Lake St.

O. W. Steinmeyer, Carlinville, Ill., to the left; Albert E. Ebert to the right. The picture shows the usual pose of the latter.

Carl Svante Nicanor Hallberg was within a few months of legal age when he arrived in Chicago, in the spring of 1877, and engaged as drug clerk for C. F. Hartwig.

Oscar Oldberg came to the city and became a member of the faculty of the Chicago College of Pharmacy in 1883, at the age of thirty-seven years. He was the last to arrive, but soon established himself as qualified for a full third of the work necessary to keep local pharmaceutical affairs in a state of constant ebullition.

These three men came to their common home at widely distant dates: Ebert, in 1841; Hallberg, in 1877; and Oldberg, in 1883. Their deaths occurred in the same sequence and during a single decade, Ebert's in 1906, Hallberg's in 1910, and Oldberg's in 1913. Thus only seven years elapsed from the first to the last demise. It is not my purpose on this occasion to repeat extended biographical information already on record, so I refer those interested to some of the published sketches, as follows:

Ebert: Bulletin of the A. Ph. A., December, 1906, Memorial Issue.

Hallberg: Bulletin of the A. Ph. A., October, 1910, p. 531.

Oldberg: Journal of the A. Ph. A., March, 1913, p. 413.

I made the acquaintance of the three during the year 1884. It was Oldberg whom I first met. I became pharmaceutical editor of the *St. Louis Druggist* in February, 1884. The Oldberg-Wall Laboratory was then in full operation in St. Louis. I had been graduated by the St. Louis College of Pharmacy the year previous, and counted Professor Otto A. Wall, of the faculty, as a personal friend. I accepted his invitation to become his assistant in the school and soon met his partner in business, Oscar Oldberg. They were both at work on the *Companion to the U. S. P.*, by Oldberg and Wall. I can recall Oldberg as I saw him for the first time. It was in the dining room of his St. Louis home. He was at work with books, proofs and manuscripts spread over the long dining table from which the dishes and cloth had been removed. I was awed in the presence of such a real author who was fifteen years my senior. I do not recall seeing him again

until eight or more of us went from St. Louis to Milwaukee, a few months later, for the A. Ph. A. convention. By the way, the since deceased of our party are: M. W. Alexander, H. F. Hassebrock, C. F. G. Meyer, Enno Sander and F. W. Sennewald. I was neither a member of the A. Ph. A. nor a delegate to that body, so my name does not appear in the roster, but I was an observant attendant at the A. Ph. A. sessions. Here I met Ebert, saw Oldberg and heard Hallberg. The proceedings were new and strange to me. They were quite unlike the meetings of the Sons of Temperance to which I then belonged. I had held office in a Cobden, Ill., lodge and in another one at Otsego, Mich. As I recall the Milwaukee A. Ph. A. convention, Ebert-Hallberg-Oldberg made a more lasting impression on me than all of the other participants together. I found Ebert ever alert and rather suspicious. He was a watch-dog of the treasury and a guardian of American pharmacy, as exemplified in the A. Ph. A. Oldberg evidenced a cool and calm determination. He seemed to be of the same opinion still, even after submitting to a preponderance of expression and nominally accepting arguments as being convincing. To him, financial questions were an annoyance. Hallberg did not often agree with either of two sides in a debate but proposed a procedure of his own. Either or both of the other views might be good, but his was the correct method to follow. This is the general impression that Ebert-Hallberg-Oldberg made on me during that A. Ph. A. meeting of thirty-four years ago. I recall one extended and animated discussion which will illustrate their relative characters. It is also timely and reminds us of the A. Ph. A. Research Fund debates, the echoes of which have not entirely died away.

Oscar Oldberg to the left; William M. Searby to the right. In profile, these two pharmacists resembled each other.

A proposition was before the Milwaukee meeting, to set aside the sum of five hundred dollars each year for research work. Ebert sprang to the floor and moved to postpone action for one year. He said something about money going like the dew of the night before the sun of the day. He said research was a good word but in this case meant experimentation and that was all it would amount to. He wanted a year for the A. Ph. A. to think it over and formulate a rigid plan for handling the money and conducting the work. Oldberg urged the importance of immediate action and laid stress on the fact that the Association had the money on hand. Hallberg waited until the two views had been expressed and then said the right thing to do would be to give the money or as much of it as could be spared to the colleges of pharmacy for real pharmaceutical research. He then mentioned

some of the unsolved problems in pharmacy and most of them are still in the experimental stage.

So much for Ebert-Hallberg-Oldberg. Now a few comments on each in a personal relation to myself for, after all, it is the personal touch that has the most to do with the sum of daily life. I do not anticipate what I have said and particularly what is now to follow will meet with universal approval. These men were too strong and pronounced during years of active life to receive a unanimity of expression from associates. I shall not, however, anticipate a single dissenting voice when I say that never in life would these three men link themselves in intimate association as I have done in the caption, "Ebert-Hallberg-Oldberg." When Oldberg came to Chicago in 1883, the three men had a common interest and work in the Chicago College of Pharmacy, but divergent views regarding needs and methods prevented them from doing real team work. Some years later, a rumor became common that Chicago had three "bergs," Oldberg, Hallberg, and between them an iceberg. Ebert might well be termed the iceberg in effect, even though his nerve tension gave him a constant high temperature. Hallberg laughed at the rumor of the three-berg story. Oldberg disdained to take notice of it. Ebert told me that if both of the "bergs" would listen to him, there would not be an iceberg between them.

OSCAR OLDBERG, PHARM.D.

He was proud of that title and, early in his work as a teacher, advocated the general adoption of the degree.

Of the three men, Oldberg was the first that I met and he was the last to pass away, but I never knew him well. Some say that no one did. I was unfortunate in my first meeting, the one in his St. Louis home in 1884. It is true I went to Oldberg on an errand, but I was his partner's assistant at the College. I was a graduate of the school, I was an editor and I was ambitious to know people who were making good in the world of pharmacy. Oldberg was intent on his proof-reading and scarcely noticed me. Somehow, that first impression was a lasting one. I never detected the least bit of magnetism in Oldberg's make-up. I was a member of an American Conference of Pharmaceutical Faculties Committee, of which he was chairman. He sent me a report to "sign." This I declined to do, and he wired me a command to sign without further delay and a long, long letter from him followed. It was written in the imperative mood and among other things told me what I must do as dean of the St. Louis College of Pharmacy. The document, which I believe I still have, was an attempt at both politics and diplomacy, but fruitless in effect on me. I believe Oldberg was a good judge of human nature but a poor hand at managing people.

Oldberg believed in condensing the A. Ph. A. meetings by having work all day and much of the night. He had no use for any part of the entertainment. Somehow, I induced him to go to the Missouri Botanical Garden with us in 1901. This was one of our entertainment trips during the St. Louis meeting. Oldberg told me, as local secretary, that it was the first time he had ever taken part in an A. Ph. A. entertainment and he admitted that he had enjoyed it. He added that he did not expect to ever again go on such an occasion, for it encouraged a feature of the meetings of which he did not approve.

I must here testify to my full appreciation of much good and timely work accomplished by Oldberg. I have in mind particularly the way in which he contended that it was the province of the school to train and of the Board to license the pharmacist.

I think the real surprise of Oldberg's life came when he learned that Hallberg had nominated him for president of the A. Ph. A. The news gave him a distinct shock and he seemed to regret that the nomination came from the fellow on the other side of the iceberg. Those who were on the Nominating Committee when Hallberg took the floor will recall with what earnestness and fervor the nomination was made.

CARL SVANTE NICANOR HALLBERG.

Hallberg never used his title, "Ph.G.," except in an academic way, but he did not object to the use of his full series of given names. In fact, he learned the given names of a large proportion of people about which he knew something. Hallberg told me that it was just as easy for him to remember "Henry Milton Whelpley, 2342 Albion Place, St. Louis, Mo.," as it was to recall "Whelpley, of St. Louis." He did admit, however, that he could not always think of his own telephone number, which fact made me feel that he was just human, after all.

C. S. N. Hallberg to the left; Dr. Morton, Ft. Smith, Ark., to the right. This photograph was taken a few months before Dr. Hallberg's death.

Hallberg came into my life at the Milwaukee meeting of the A. Ph. A. in 1884 and remained there until we laid him to rest in Graceland Cemetery, Chicago, in 1910. We met at the A. Ph. A., Illinois, and other state pharmaceutical conventions, and were thus together a few times a year. In early days, I bunked with him in Chicago and after his marriage always visited his interesting home whenever I was in the city. Do not infer from this that we always agreed. He did not expect that much from any one. He enjoyed oral contention and never sidestepped an offhand dispute. I did not take his criticisms as abuse and he spoke and acted when we were together with a freedom which I believe was true to his innermost nature. I know he always made a confidant of Fred W. Meissner. Yes, Hallberg often consulted friends, but could not always convince himself that it was best to follow their advice. No one ever accused him of mental inertia and he was liable to get a new idea of his own and act on it with enthusiasm. To me, he was a bundle of information, ideas and enthusiasm. Conscious touches of satire and invective often got him into trouble. He was weak in diplomacy and knew it so well that he was more apt to "take his medicine" than to try to

fix things up. But Hallberg was tender-hearted and I have heard him make abject apology when he had been misunderstood and hurt some one's feelings.

C. S. N. Hallberg, Mrs. Hallberg and their son Carl, photographed in their Chicago home by H. M. Whelpley.

My life with Hallberg was so full of interesting incidents that I desist from starting on the list.

The manner in which he so freely gave his time as one of the executors of the Ebert estate and how he helped arrange for the funeral and then edited the Ebert Memorial Volume are all matters of record. He arose above all personalities of days gone by and performed a task which perhaps no one else could have done so well.

Then, let us recall how, after Hallberg's death, his friends in the A. Ph. A. over-subscribed to clear the title to the home for his widow and son. This was the only time that such an action was ever authorized by the A. Ph. A. It was a fitting testimonial to the fact that pharmacists of America understood and appreciated Hallberg as I knew and loved him.

ALBERT ETHELBERT EBERT.

I earned and saved sufficient money to take me through the St. Louis College of Pharmacy before I entered the institution, but my bank account was small when I finished. I was attending the Milwaukee meeting of the A. Ph. A. to represent the *St. Louis Druggist*. I did not feel able to join the association and explained the matter to Ebert. Just why I told him about it I do not know. I well remember, however, that he patted me on the shoulder and said, "My dear boy, that is all right. You stay right here, and if any one objects, just let me know." I was twenty-three and he was forty-three years old. Somehow, I never outgrew the feeling that he had a fatherly interest in me. I know I was only one of many boys he coached at pharmaceutical meetings. He also encouraged and helped many young men in writing papers. Ebert was called erratic by some. He, too, was rather weak in diplomacy but often gave good horse-sense advice. We were both members of the Committee on Transportation for the 1889 meeting of the A. Ph. A., at San Francisco. I had joined the A. Ph. A. in 1887. During the Mo. Ph. A. meeting at Excelsior Springs, that year, Wm. J. M. Gordon, George Leis and C. M. Ford, also members of the committee, met Ebert and myself and a few railroad men for a conference. It proved to be a long drawn out and strenuous discussion. The details do not now concern us. It was my first acquaintance with George Leis, but Ebert knew him well. Mr. Leis discussed me with

Ebert and said in my presence, "Why not make the young man president of the A. Ph. A. this year?" I do not think he meant it for more than a complimentary remark. I know I did not take it seriously, but what Mr. Leis said worried Ebert. At the first opportunity, Ebert mentioned the matter to me privately and said, "Look here, young man, don't you get the presidential bee in your bonnet! No, not now; perhaps some time, but not for years." What a wonderful example of good judgment, personal interest in a young man and a care for the welfare of the A. Ph. A. But that was just like Ebert. Twelve years later, when I became president of the A. Ph. A., I reminded Ebert of the 1889 incident. His only comment was, "Did I do that?"

Ebert did not like to "tie up" with people, for he knew sooner or later, and usually sooner, he would disagree with them and he wanted to be free to speak his mind. But I do know that Dr. George W. Sloan and Leo Eliel were held in high personal esteem by Ebert.

Ebert shunned office, for he could be more independent as a high private. But you never found him in the rear ranks. He occupied a seat in the front row and his presence helped make it the firing line. The only office I ever knew Ebert to really want was a place on the Board of Trustees of the U. S. P. C. Such a position he was given by the convention of 1900, and he served until his death, six years later. I was associated with him on the Board and must testify to his wonderful usefulness in the cause of American pharmacy. It was the beginning of the first decade for the Board and Ebert helped in establishing sound business precedents for time to come.

Photo taken at Lake Minnetonka A. Ph. A. meeting. Left to right: Local Secretary Edward Shumpik; Treasurer S. A. D. Sheppard; C. M. Ford; Caswell A. Mayo; Albert E. Ebert; H. M. Whelpley.

The Ebert Prize Fund of about twelve hundred dollars and the Ebert Legacy Fund of about five thousand dollars which he gave the A. Ph. A. indicate his regard for the value of that organization. Ebert was quite as much a man of deeds as he was of words.

The Chicago Veteran Druggists' Association, I believe, literally prolonged the life of Ebert. At the same time, his historical work for the C. V. D. A. proved to him that history makes some amends for the shortness of human life.

I have spoken of Ebert as I knew him, but he had a personal touch with hundreds of other pharmacists. His death received more extended attention in the drug world than that of any other retail druggist. The funeral ceremonies were attended and conducted by delegates from nineteen pharmaceutical organizations.

In closing, I cannot help but think of these three men as they would likely be if with us during the most supreme phase of our country since the Civil War. The ever-calm Oldberg would turn aside from routine work to help in the duties coming to those who must remain at home in civil life. Ebert, the sturdy warrior in times of peace, would enlarge his field of action during the world war and every

Dedication of the Albert E. Ebert monument in Graceland Cemetery, Chicago.

act ring true to the cause of the World Democracy. Then comes Hallberg, who never was a pacifist in principle, word or action. He would go over the top on the slightest pretext. Hallberg was always a student of the nation's heart pulse. So, in brief, the contribution of pharmacy to the work of the Allies in the World War would have been even greater than it is now if Ebert-Hallberg-Oldberg were still with us.

A FRENCH PHARMACEUTICAL DILEMMA.

The French law prohibits the sale of "secret remedies" and includes under this definition all preparations not in the Codex, or the formula of which has not been published by the Government, hence excludes the sale of valuable recent additions to the materia medica, of utmost therapeutic value as well as the most evil mixture engendered by quackery. We are quoting an editorial of the *Chemist and Druggist* of February 22, 1919, in which a case of 1906 is cited in which the French higher court decided that a pharmacist who had supplied urotropine on a medical man's prescription was guilty of a punishable offense—urotropine not being included in the Codex it was a "secret remedy," hence might not be supplied. It is not now in the Codex. The General Association of Pharmaceutical Societies has drawn the Government's attention to the situation, and has asked for a ruling that a paragraph of the law of May 3, 1850, be construed that new remedies recognized as useful by the National Academy of Medicine, and the formulas of which are approved by the Minister of Agriculture and are published by consent of the owners and inventors, shall no longer be considered "secret remedies." These then may be freely sold pending their inclusion in the Codex.

This has raised the question of pharmaceutical specialties "the nature and composition of which rests solely on the arbitrary choice of their manufacture." Professor Bourquelot gave the following definition at the Academy: "An honest specialty requires a legal existence as it complies with the sole condition of publishing its composition. The originality of the product resides in the perfection of its manufacture, and the use of operations and procedures which are not disclosed; but *no substance whatever may be administered to the patient unknown to the doctor*. That is the minimum of protection necessary for the health of the public, and which the Academy has the right of demanding." The Academy itself formulates the following addition to the law of 1850, *viz.*, "that every simple or compound remedy, the quantitative as well as qualitative composition of which is not known, shall be regarded as a secret remedy and proceeded against as such."

WOMEN'S SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

ABSTRACT OF THE MINUTES OF THE SESSIONS HELD IN CHICAGO, AUGUST 14, 1918.

First Session.

The Seventh Annual Meeting of the Women's Section of the American Pharmaceutical Association was called to order in the French Room of the Congress Hotel, Chicago, Illinois, Wednesday, August 14, at 9.30 A.M., by the President, Miss Zada M. Cooper. The Invocation was offered by Mr. Charles Avery.

Mrs. Forbrich, of the Local Committee, extended a hearty welcome, stating that the members had, during the past several months, perfected plans for the entertainment of their guests, and hoped for an enjoyable week; that the program provided for entertainments and sight-seeing, and the members of the Local Committee would do everything possible to make the occasion a most enjoyable one for guests and hosts.

Miss Zada Cooper expressed the appreciation of those present in a few well chosen remarks, assuring the people of Chicago that all the interest manifested by them was reciprocated, and that all members of the Section greatly enjoyed the privilege of the few days' stay in their midst. She thanked the hosts through the representative of the Local Committee, Mrs. Forbrich, for the delightful entertainment, which she knew would be enjoyed by the visiting members.

Miss Anna G. Bagley assumed the Chair while the President delivered her address.

THE PRESIDENT'S ADDRESS.

The Constitution of this Section enumerates five things in the article which states its object. This is what it says: "The object of this Section shall be to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood, to unite the women employed in pharmaceutical pursuits for mutual encouragement and assistance, to labor for the improvement of legislation regulating the registration as pharmacists of women employed in the practice of pharmacy in hospitals and other public institutions, to unite the women members of the A. Ph. A. in a Section for social purposes, and to coöperate in the promotion of the general progress of pharmacy and of the American Pharmaceutical Association."

These are all worthy objects. None should be lost sight of at any time, but perhaps at no time will they claim our attention equally. The first, "to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood" can be forgotten for the present, at least. Prejudice dies hard, but I believe there is little doubt at the present time of either the right or the capability of women to be in pharmacy. We do not need to emphasize this particular object, but the fourth one demands all the attention that this one does not need. It is, "to coöperate in the promotion of the general progress of pharmacy." Perhaps I may be reading an unusual meaning into the word progress, something not found in the dictionaries. Call it general welfare of pharmacy, if you prefer, it may not be promoting scientific progress, but that is not the only sort of progress and this surely will make for economic advancement. To come to the point, I would undertake to induce more young women to go into pharmacy.

Just now it is a patriotic duty for women to take up the study of pharmacy. There isn't anything spectacular about a pharmacist's work, but it is just as essential to the conduct of the war as that of the physician or the dentist. Without the necessary medicinal supplies the physician would be unable to do much that he is now doing. Incidentally, we know that the quality of service in the Army and Navy is not what it should be because of the lack of a pharmaceutical corps, but that is not the question that we are considering. In spite of the injustice being done to the soldier and the sailor, we know that pharmacists are having a large part in the manufacturing of medicines and chemicals, if they are not in dispensing, which will help materially to bring the war to a successful completion.

It is not the right and capability of women to engage in pharmaceutical pursuits that we need to emphasize; it is an absolute necessity from two standpoints, that of the profession and for the sake of womanhood itself. The profession must be kept up. The druggist must have help and young men are not available. He must be induced to lend his effort toward interesting young women to take up the study. Heretofore he has been on the lookout for bright young men who might be interested to become apprentices. Now he must transfer a part of that interest to young women.

Perhaps it may seem to you that women do not care about becoming pharmacists. You know that pharmacy has been open to women of America for many years and yet not many have gone into it. Why haven't they? The reasons, perhaps, are many and various, depending on the locality. In some localities, there has been that despicable business, a saloon in the guise of a drug store. No self-respecting young woman wants to become a bar maid, even if she had the chance. No druggist who has seen fit to conduct that kind of a business wants a woman around. Then very often the small-town druggist handles paints, oils and wall-paper, or employs only one individual who is able to handle these heavy commodities. However, there are two outstanding reasons, first, women have not been so much needed and, second, the women have not known about the opportunities in pharmacy. Not so *much* needed and yet they have been needed somewhat. Have we not been hearing about the shortage of drug clerks for some time? Women could have helped to reduce that shortage. Perhaps you may recall that the A. Ph. A. as long ago as 1906 called attention to this very thing. Listen to this resolution adopted at that time:

"Whereas, The general expression of satisfactory experience of members who have in their employ women pharmacists, is worthy of more than passing comment. Considering the present scarcity of assistant pharmacists and the meager prospect of any immediate improvement in this respect, we believe the ultimate solution of the problem lies in the encouragement of especially qualified young women to enter on the occupation of pharmacy. Therefore, be it *Resolved*, That wider publicity be given to the favorable reports obtained from sources where women pharmacists have been employed."

Now I know we have a feeling that resolutions do not get anywhere, that they do not accomplish anything, and I am not prepared to say that this one did bring results, but it was an expression, an honest expression, I think we may believe, of the state of affairs then existing, and that is my only reason for quoting it here.

The second reason for women not going into pharmacy heretofore in larger numbers was that they did not know of the opportunities. Let me tell you why. Unless a girl belonged to the family of a druggist or a doctor, or unless her family was on terms of intimate friendship with the druggist's family, it never occurred to her that she could be a druggist. I know this to be true from my connection with a college of pharmacy. With every incoming class one is interested to find out how they happened to come. An understanding of the motive which brings an individual to college is necessary to the teacher who would meet his students as distinct personalities. That phase of the question is irrelevant in this connection, however. The college as an institution wants to know why they have come. Private institutions that advertise are interested because it is a simple business proposition to know what sort of advertising pays. State institutions that do no advertising, in the strictest sense, are no less interested because they want to know what sort of publicity is valuable. Quite generally it is found that students have become interested through acquaintance with former students. The alumni of any college are its best friends and, if dissatisfied, its worst enemies. They recognize the debt they owe their alma mater or just from love of it they direct others to it. That explains why young people go to a particular institution, but why do they study pharmacy at all? That is only a step further. Almost always some druggist has interested them in one way or another. Sometimes the connection is hardly tangible, but it is there nevertheless. This is true of the girls as well as the boys. Some relative or friend was a druggist, or a doctor, and told them of the possibilities in pharmacy. Druggists have not talked to girls more extensively on the subject because they have not needed their help so seriously, and there has been no one else to tell them.

I suppose it is mostly during their last year in high school that they begin to think about what they are going to do—what college they will choose. If they talk with anyone besides their parents it will be with their teachers. Naturally they are likely to hear a good deal about

teaching. A successful teacher has love for her work and the natural sequence is a desire to interest others in it. If students are not definitely advised to teach they often enter the vocation because they lack knowledge of other suitable occupations. Women have been engaged in teaching for a long time and opposition to them as teachers ceased long ago. I am convinced that hundreds of young women just gravitate into this profession, some of them, by nature absolutely unsuited for it. That is why so many never get above mediocrity. I do not mean to say that all young women would make good pharmacists any more than all can become good teachers. But they should know about the opportunities in pharmacy. They seldom, if ever, see college of pharmacy advertisements for such advertising matter appears mostly in drug journals. Announcements of colleges are sent freely to high school principals but few young people, who have not yet attended college, find those publications intelligible. Besides, an interest in any profession must be aroused before the prospective student will pay much attention to a college catalogue. It simmers down to the fact that there is little publicity concerning pharmacy except that directed by pharmacists to pharmacists.

How then are young women to learn about it? Though not an avowed object of this Section, can we do any greater work in these days than to undertake to tell young women about pharmacy and perhaps urge druggists to try to get them into the profession? If we can do these two things it seems to me we shall be accomplishing something worth while. I said it was a necessity for women to rise to the situation. Women must help win the war. We are non-combatants and we must remain so, but that does not relieve us of responsibility. Unless we step in to fill whatever post is left vacant by the men who have gone to the front we show ourselves, not the weaker sex but worse than that, weaklings. That is one thing the American woman is not. We, who have had so much more liberty and opportunity than some of our sisters across the water, would resent any insinuation that we shall not rise to meet any situation, but resentment is unavailing if it does not stir us to action.

If every druggist's wife from Maine to California would take it upon herself to tell a few girls, whom she knows, about pharmacy, its opportunities and its needs, no other propaganda would be necessary. However, not every druggist's wife is within hearing of my voice and, even if they were, I am not so conceited as to believe that I could convince them of the wisdom of such effort. Still I am ambitious. I want this Section to undertake to reach some portion of the young women of the country. I believe we need no additional machinery. Our officers and committees could take care of it. If we are interested and enthusiastic no obstacle would be unsurmountable, unless it might be the financing of such a project.

Our Press chairman, Miss Bagley, believes that we might reach many girls directly through the magazines published by most high schools. If it were possible to do this, short readable articles, setting forth the opportunities for women in the profession, would make available some information and set some girls to thinking. I have long been of the opinion that we must reach the girls directly. No matter how much literature we may send to school principals, if it reaches the girls at all it fails of its direct appeal. If only we can get them thinking that there are possibilities outside of teaching and secretarial work, they can find out from some college in their own state the particulars about what entrance into the profession involves. They all know some druggist to whom they can go for information, if not advice.

Then, I would have our Outlook Committee enter upon a similar campaign from a different angle. If this committee could reach club women through the state federations, some mothers might be interested in hearing about congenial work for their daughters. Not being familiar with the machinery of these organizations, I am not sure what would be the best method of procedure, but our committee could decide that. There is also the general federation magazine which might accept matter for publication.

Then, our Secretary should reach still another group, the presidents of the Women's Auxiliaries of State Pharmaceutical Associations. This ought to be productive of much good because these women belong to the families of druggists and understand conditions. They should be urged to lend their personal efforts toward interesting young women in pharmacy. They can do this directly and through their husbands, but it is the direct personal effort that we wish especially to bring about. Where there is no auxiliary the association itself might be reached by asking the secretary to bring it to the attention of the association at a convention or, through the official publication of the association.

In every case the appeal should be brief and to the point. It ought to state that the Women's Section of the A. Ph. A. is backing the project. It ought to make plain the fact that this Section is made up largely of druggists' wives, that this is not the effort of women druggists. My reason for believing that emphasis must be placed upon this fact is because I find a number of men of the A. Ph. A. who believe that the Section attempts to segregate women pharmacists, not on the part of women pharmacists (which is exactly what we do not want, by the way) but by others. If A. Ph. A. members believe this, isn't it perfectly natural that people outside of the A. Ph. A. should draw that conclusion? In fact, I am not so sure but the very name itself has a decided tendency to make the uninformed interpret it that way.

Perhaps I may be allowed to digress a little to say, for the benefit of my sister pharmacists, that in the course of considerable correspondence on an entirely different matter, I have been very much gratified to have expressions that women pharmacists should have an active part in all the regular Section meetings of the Association and that they can be of real service there.

To return to what our communication should embody: It should set forth the fact that pharmacy offers many and varied opportunities to women, that the work is not limited to retail pharmacy, that manufacturing laboratories, analytical laboratories and hospital dispensaries are all open to them, and that the work is pleasant and productive of larger remuneration than most work requiring the same amount of preparation. It should tell them, too, that they can serve their country in no larger way. A great appeal is being made all over the country for women nurses, a noble work, but, though the glory of a pharmaceutical career has not played so conspicuous a role in poetry and fiction, though outwardly it may seem quite unromantic, it is none the less as necessary a part in the life and health of our men in the trenches and for our civilian population at home as the doctor's diagnosis of disease and prescription therefor, or the nurse's implicit following of directions. In fact it seems to me more fundamental. I would not depreciate the importance of the work of either surgeon or nurse; I have very great admiration for what they are accomplishing. Analyze the situation a little. How fruitless would all the efforts of doctor and nurse be in any acute disease if the wrong remedies were administered, how much could a surgeon accomplish without correctly made antiseptic solutions?

The letter or circular to state association auxiliaries should say less, perhaps, about the opportunities for women in pharmacy and more about women's possibilities for usefulness in the drug business, because the druggists' wives are not strangers to the advantages of pharmacy and will know how to interest girls, if they are convinced that women are able to meet the present emergency in any degree.

I have said much more about what I would have in this communication than is necessary to be included. To summarize: We should say enough to show that it is an agreeable field with abundant opportunity for advancement professionally and financially, enough to arouse young women to investigate the possibilities for themselves, enough to cause older women to exert themselves to bring it to the attention of the young people.

I realize that this program, which I am proposing, is one whose results we may never be able to measure. Even so, I think it is the thing for the Section to undertake. I am especially anxious to have you, who are not druggists, enter into it. We, who are druggists, are perhaps no more whole-heartedly interested in pharmacy and its progress, but it is in a different way than you are interested. It seems to me you can do no bigger thing for pharmacy just now than this. In other years, you can work along other lines: Shorter hours and Sunday closing, objectionable window displays or other advertising, patent medicine evils, and other unsolved problems. They are all worth your effort but they sink into insignificance now, in the face of the colossal task of winning this war. That interest must be paramount.

You have all done much: You have almost forgotten how wheat bread tastes, you have bought Liberty Bonds and War Savings Stamps and given to the Red Cross and the Y. M. C. A., you are all overworked with hours spent in making surgical dressings and all sorts of garments for soldiers, Belgian refugees and French orphans. If any waking moment is left the everlasting knitting is at hand, but all loyal women are doing all these things. You owe a duty to the profession of your husbands. Your very presence in this Section presupposes an acquiescence in its avowed object, "to coöperate in the promotion of the general progress of pharmacy."

I am reluctant to make even one specific recommendation when I look back and see how many excellent recommendations made by my predecessors in office have come to naught at

our hands—mine and yours. Yet I fear I must make a few, and trust that the committee acting upon them will not stop with approval. If my recommendations have any merit will you not adopt them and vote to have them carried out by our successors in office? If they are without merit, or you believe that for lack of finances or other reasons they can not be put into effect, I shall consider it good judgment to vote against them.

Therefore I recommend:

1. That our Press Committee be instructed to make an effort to get brief articles about the opportunities for women in pharmacy into high school magazines.

2. That our Outlook Committee be instructed to reach club women in whatever way seems most feasible with similar information.

3. That our Secretary be directed to communicate with the president of each Women's Auxiliary of the various State Pharmaceutical Associations, urging each woman to make an effort, in her own locality, to reach high school girls individually and through local women's clubs or local druggists' associations.

Mrs. Whelpley moved, seconded by Mrs. Christensen, that the President's address be referred to a committee. Motion carried.

Chairman, Miss Bagley, appointed as the Committee on Addresses, Mrs. H. M. Whelpley, Miss Clara Hulskamp and Mrs. M. M. Gray, to whom President Cooper's address was referred.

A paper was read by Miss Clara Hulskamp.

THE WOMAN PHARMACIST.

BY CLARA HULSKAMP.

At the present time, propaganda is being advanced as regards the filling of places occupied by men before the war. But, it is a fact, that the status of "The Woman Pharmacist" is already established. It is a matter of record that 35 years ago, in 1883, the Philadelphia College of Pharmacy graduated the first woman of that college, and, in the same year, a woman received the degree of Pharmaceutical Chemist at the University of Michigan. About the same time, a college was founded in Louisville, Ky., by Dr. J. P. Barnum, known as the "Louisville College of Pharmacy for Women." It has been said, it was the only college of its kind and it existed about nine years.

The colleges of pharmacy of the present day are co-educational and are urging the enrollment of women, as it is so poignantly felt that to "keep the home fires burning" it behooves the wives, daughters and sisters of pharmacists to awake to a specific interest in the profession; heretofore, it has been a matter of circumstances, individual desire or inclination.

Patience, neatness, aptitude, manipulative skill in dispensing drugs and chemicals, are some of the qualities of a first-class pharmacist. Are they not innate characteristics of women?

The requirements of a registered pharmacist are time of experience, education and state board examination; these requirements are well met by women as evidenced by the success in the past of the women applicants.

The field of endeavor in the profession of pharmacy may well be divided into two classes, the first being that to which time, energy and knowledge are devoted to pharmaceutical work alone, and the other includes business training in the mercantile world. Both fields claim successful women pharmacists.

To the embryonic woman pharmacist, let us pass along the word: "To succeed, you have to dream and dream true. Then you have to work faithfully, earnestly, steadily and agonizingly to make your dreams come true."

The Secretary-Treasurer, Mrs. H. R. Kenaston, gave the annual report as follows:

REPORT OF THE SECRETARY OF THE WOMEN'S SECTION.

To the President and Members of the Women's Section of the American Pharmaceutical Association:

Since our Nation is engaged in war, the report of your Secretary must necessarily include a mention of the part the members of this organization should take in the great struggle. While we regret the necessity for war activities, so long as the husbands, sons and brothers are engaged

in the conflict with the enemy, offering their lives for the cause of liberty, freedom and justice, the wives, mothers, sisters and sweethearts must prove their merit to this supreme effort by giving their all in full measure. Your Secretary has made every effort to advance the best interests of the Section with a minimum demand upon the time of all and, though the essential duties have been most cheerfully performed by all members of the Section, conservation of time and effort has ever guided the activities of the Section.

During the year since the Indianapolis meeting, the constitutional duties of the Secretary and the Treasurer have been performed. In addition, a large number of letters have been sent to the high schools and universities, directing the attention of the young women students to the vacancies caused by enlistment of drug clerks.

Further, it is just as clearly the patriotic duty of a young woman to prepare herself for the professional positions vacated by the necessities of war as it is her patriotic duty to offer her services as a Red Cross worker, or as the assistant in office or factory, where her energies have become a positive necessity. Each is a requirement for services, emphasized by the exigencies of war, and each is an essential factor in the successful mechanism of the nation. Though the intention in sending out the letters has been to promote the plan as indicated at the Indianapolis Convention, only time will reveal the results.

During the four years just passed, the European women have volunteered their services and their help has now become a necessity. The long-continued war has extended woman's sphere to include the most menial labors from which conditions she has entered the field of economic efficiency hitherto operated exclusively by men; and she has carried the added responsibilities with a fortitude, sacrificing in a degree akin to that of her brothers.

The women of America are not exempt from a tendency toward this condition. As the number of men in our Army multiplies, the demand for women to take the vacated positions likewise is extended to all the professions and occupations to which she may adapt herself; as the number of boys in the professional classes in the universities and colleges decreases, this number must be made up, so far as may be possible, by the young women from our high schools and preparatory educational institutions.

A survey of the conditions since America entered the war emphasizes the ardent desire of the American women to serve; young girls are assuming positions formerly occupied by men; the business colleges, universities and colleges show a predominating number of women students. Girls are now employed in operating elevators, as ushers at theatres, etc.

With this yearning for service, comes the inquiry as to the possibility of each field. The Women's Section of the American Pharmaceutical Association is constitutionally required to disperse the advantages of the profession of pharmacy, and it is to this organization that the people may properly turn for the plan that will lead to success in placing this knowledge before the young women at the proper time in the progress of their education.

Your Secretary would recommend that each preparatory educational institution be circularized. Possibly the best procedure would be the appointment of a committee to consist of a chairman with a sub-committee in each state and country represented in the membership of the American Pharmaceutical Association, with provision for postage and official stationery.

The demand for educated pharmacists has never been so great, the salaries obtainable have never been so attractive as at the present, and the number of available pharmacists has never been so small. These, together with other reasons, must be placed before the young women if our efficiency as a Section is promoted and our reason for existing becomes a reality. Pharmacy is a work for which women are admirably adapted, clean and healthful work that any trained woman can do satisfactorily.

Very soon after assuming the duties of the Secretary-Treasurer's office, the balance in the hands of the former Treasurer, Mrs. F. M. Apple, was received, which amount is $9.00. Anticipating additional expenses for the present year, this amount was made to meet all expenditures of the year, except that assumed as the chairman of the committee appointed by the retiring President, the duties of which shall be to prepare the Constitution and By-Laws to be printed in booklet form.

This report has been prepared and will be presented at a later time, when the action of the meeting will be the final disposal of this matter.

The President and Secretary issued invitations to such of the profession as could be located and also to the families of the membership so far as obtainable, giving special stress to prospective members for the A. Ph. A. within a distance that would reasonably be practicable to attend this meeting.

In conducting the necessary work of the office, I have written 386 letters and 94 post cards. Since assuming the office I have traveled 4,440 miles in the interests of official duties. Your Secretary is deeply grateful and desires to give public expression for the uniform kindness shown her, and for the kindly coöperation in all her official relations; all have tried to share with me the official duties.

To our President, Miss Zada M. Cooper, I extend my thanks for the interest and valued directions in the details of the year's work. Without her guidance and helpful assistance it would not have been possible to have accomplished all that has been done.

"There is a glory in doing right,
And a splendor in being true,
That is greater than anything else,
Life can possibly bring to you."

Fraternally submitted,

(Mrs. H. R.) Jean McKee Kenaston,
Secretary.

Motion by Mrs. L. F. Kebler that the Secretary's report be accepted and referred to a committee prevailed.

The President explained that since there are a number of recommendations covering the same points in the President's Address and in the Secretary's Report, if referred to the same committee these matters would better be coördinated, whereupon the same committee was directed to act upon Secretary's Report.

Mrs. C. F. Dye, Chairman of the Executive Board, was not present, and the report was presented by Miss Bagley:

REPORT OF THE EXECUTIVE BOARD.

Madam President and Members of the Women's Section of the American Pharmaceutical Association:

The Executive Board of your Section finds on summing up the year's work that there is little to report. This no doubt is due to the fact that the members of the Section, together with all other patriotic women, have adapted themselves to the needs of the hour and given all their time to their local organizations engaged in war work. As a result we have not been called upon to transact any other than routine business. However, much time, thought and correspondence were given to the formulating of a program, which we hope will be worthy of the best ideals of the Section.

The Board is deeply grateful to those who have so generously given their valuable time to contribute to the program. In recognition of their services and the messages they have brought us, we trust that the members will show their appreciation by adopting, for the present, as their motto the one word, Service, which may be applied in so many different ways.

Respectfully submitted,

Mrs. Clair A. Dye, *Chairman.*
Mrs. Geo. D. Timmons,
Mrs. E. A. Ruddiman.

The motion by Mrs. Whelpley was seconded and carried that the report be accepted.

Miss Anna G. Bagley, chairman of Membership and Press Committee, reported as follows:

REPORT OF MEMBERSHIP AND PRESS COMMITTEE.

The Membership and Press Committee brings in a report of no report, not because there was not anything to be done, but because conditions prevailed with the Press Committee similar to those of the Membership Committee; it seems that the Press work was done for us. Heretofore if we wanted to get anything into the journals regarding what women were doing in phar-

macy, we generally had to beg for it. I have a very distinct recollection of asking the editor of a very prominent journal to give us a nice report, and I almost had to beg him to do it, but he reported the A. Ph. A. convention in big headlines, and made no mention whatever about the Women's Section. To-day we can not pick up a pharmaceutical journal but that devotes from one column to a dozen relating to the opportunities of women in pharmacy. Now is an opportune time for a Press Committee, and I hope that the members will be able to utilize the work that has been done voluntarily on the part of the journals and others interested in pharmacy. It is certainly pleasing to see the change of attitude.

By vote of the Section, the report of the Membership and Press Committee was accepted.

Miss Cooper read a letter from a former President, Mrs. J. G. Godding, of Boston, expressing regrets that she was unable to attend and wishing a successful meeting.

Letters were also presented from Mrs. Fletcher Howard, Mrs. John F. Hancock, Honorary President; Mrs. C. A. Dye, and Mrs. John Culley, a former President, each expressing regrets for absence and wishing a pleasant and successful session.

Before the close of the 1917 meeting, held in Indianapolis, the President appointed a special committee to rearrange and revise the Constitution and By-Laws, that same would include the various changes as adopted during the interval since the original were adopted.

Chairman Mrs. H. R. Kenaston, of the Committee on Constitution and By-Laws, presented the report as follows:

MADAM PRESIDENT: The Committee on the Revision of the Constitution and By-Laws have the honor to submit the following By-Laws and by the instruction of the Committee I move they be adopted as a substitute for the present Constitution and By-Laws.

Mrs. Kebler seconded the motion, which was carried.

President Cooper directed the Chairman to read the By-Laws.

BY-LAWS OF THE WOMEN'S SECTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.*

ARTICLE I.

Name and Object.

Section 1. This Section shall be known as the *Women's Section of the American Pharmaceutical Association.*

Sec. 2. The object of the Section shall be to emphasize the right and capability of women to engage in pharmaceutical pursuits as a means of livelihood; to unite the women employed in pharmaceutical pursuits for mutual encouragement and assistance; to labor for the improvement of legislation regulating the registration as pharmacists of the women employed in the practice of pharmacy in hospitals and other public institutions; to unite the women members of the American Pharmaceutical Association and the women of the families of members of the American Pharmaceutical Association in a Section for social purposes; and to coöperate in the promotion of the general progress of pharmacy and of the American Pharmaceutical Association.

ARTICLE II.

Membership.

Section 1. Members of this Section shall consist of the women who are regular members in good standing of the American Pharmaceutical Association, and the women who are of the families of regular members in good standing of the Association.

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* To be presented to the Council and Association for final approval.

ARTICLE III.

Officers.

Section 1. The officers shall consist of a President, three Vice-Presidents, a Secretary-Treasurer, and a Historian, all of whom shall be elected by ballot annually, and shall hold their respective offices for one year and until their successors shall have been elected and qualified. Their duties shall be such as are prescribed in the parliamentary authority of the Section and in these By-Laws.

Sec. 2. It shall be the duty of the President to preside at the annual meeting, to appoint all committees not otherwise provided for, to see that the By-laws are observed, and to perform such additional duties as may be delegated to her by the Section or by the Executive Board.

Sec. 3. It shall be the duty of the Vice-Presidents to preside in their order in the absence of the President, and to perform such additional duties as may be imposed from time to time by the Section or by the Executive Board.

Sec. 4. The Secretary shall keep the minutes of the meetings and the records of the Section and of the Executive Board; shall conduct the general correspondence; shall notify all committees of their appointments and of any special duties which may be imposed; and shall also notify officers not present at the time of their election, of their election.

Sec. 5. The duty of the Treasurer shall be to receive and keep an account of the funds of the Section, and pay them out on the order of the Secretary, countersigned by the President.

Sec. 6. It shall be the duty of the Historian to record the progress and activities of women engaged in pharmaceutical pursuits in the several states, and to present a report of the matter accumulated at each annual meeting of the Section.

Sec. 7. An Honorary President for the year may be elected at each annual meeting by a vote of two-thirds of the women who are present.

ARTICLE IV.

Executive Board.

Section 1. The Executive Board shall consist of the President and the Secretary *ex-officio*, and three elected members, one of whom shall be elected by ballot at each annual meeting to serve for three years.

Sec. 2. It shall be the duty of the Executive Board to direct the affairs of the Section in the interim between the annual meetings, to arrange the program for the annual meetings, and to perform such additional duties as may be imposed upon it by the Section. The Board shall have authority to conduct its business by mail. All acts of the Executive Board shall be subject to revision by the Section. It shall be the duty of the Chairman of the Board to assign and supervise the work of the Standing Committees so that the work may be definite and uniform.

ARTICLE V.

Standing Committees.

Section 1. The Committee on Membership and Press, the Outlook Committee, and the Hospital Committee shall constitute the standing committees of the Section.

Sec. 2. The Committee on Membership and Press shall consist of eleven members of the Section, composed of a Chairman, elected by the Section, and ten active workers, who shall be appointed by the President.

Sec. 3. The Outlook Committee shall consist of nine members of the Section, appointed by the President, whose duty it shall be to investigate and report on the work of the women pharmacists, to investigate the education of women students wishing to take up the study of pharmacy and to coöperate with women's clubs.

Sec. 4. The Hospital Committee shall consist of four members of the Section, appointed by the President, whose duty it shall be to investigate and report on conditions of pharmacists in institutional pharmacy.

Sec. 5. The members of all special committees shall be appointed by the President, unless the Section shall prefer to elect.

ARTICLE VI.

Meetings.

Section 1. The Section shall hold one regular annual meeting during the annual meeting of the American Pharmaceutical Association, and such additional meetings or sessions as the Section shall determine.

Sec. 2. On the first day of the annual meeting the President shall appoint from the members of the Section a nominating committee of five, and not less than four tellers, to count and report the ballots at the annual election. The nominating committee shall report on the same day or a succeeding day, as the Section may direct, nomination for all the officers, for the member of the Executive Board, and for Chairman of the Committee on Membership and Press: Additional nominations may be made from the floor. The elections shall be by ballot, unless, where there is but one candidate for an office, it is dispensed with by unanimous consent. The officers elected who are present shall be installed at the close of the annual meeting.

Sec. 3. Special meetings of the Section may be called by the President at her discretion, and shall be called by her upon written request of the Executive Board, or upon the written request of any five members of the Section.

Sec. 4. Seven members shall constitute a quorum at any meeting of the Section.

ARTICLE VII.

Parliamentary Authority.

Except as herein provided, the proceedings of the Section shall be governed by the general rules of parliamentary law as stated in Roberts' Rules of Order Revised.

ARTICLE VIII.

Amendments.

Amendments to these By-laws shall be proposed in writing at one meeting and balloted for upon a subsequent day, when upon receiving the vote of two-thirds of the members present, they shall become a part of the By-laws.

NOTES TO BY-LAWS.

These notes relate to former and proposed By-Laws of this report, and are part of the proceedings.

As the only object of dividing the fundamental rules of a society is to separate the more important ones and make them more difficult to amend, there is no use in dividing them when they are all equally difficult to amend. It is simpler to call them all By-Laws and this change has been made.

By-Laws are divided into Articles, not Sections, and these sub-divided, when necessary, into Sections.

Article II.—Section 1. A slight change to make it clearer.

Section 2. This section is struck out as useless, as all members in good standing have a right to vote and hold office.

Article III.—Section 1. "Honorary President" is struck out as she is not an officer. The office is complimentary and carries with it no duties or obligations. It is provided for in Section 7 of this Article (See "Rules of Order," Revised, p. 267). A sentence is added to this Section, which renders unnecessary the remaining sections of this Article except the last. They have been retained, however, thinking you might prefer a brief statement of the duties. The Executive Committee has, in all cases, been changed to Board or Executive Board, as explained in Article IV.

Section 4. This has been corrected by inserting "and of the Executive Board," after "Section" in the second line.

Section 7 provides for an honorary president. As this is merely a compliment it should never be conferred except by a large vote. The section has been drawn up to conform to the rules sent me, that is, an honorary president is elected each year for one year.

Article IV.—This article provides for the Executive Board, which should never be called the Executive Committee. See "Rules of Order," Revised, p. 207.

Section 1. This section is re-written. The method of filling a Board at the first election should never be placed in the By-Laws, it should be provided for in a resolution adopted before adopting the By-Laws. You have already adopted By-Laws and now only propose to amend them, so that you will merely go on electing each year one member of the Executive Board for three years.

Section 2. Motions need never be seconded in boards and committees, so that provision has been struck out as it is misleading. (See "Rules of Order," Revised, p. 209.)

Article V.—This Article includes all of Section IV, except what relates to the Executive Board.

Article VI.—This covers meetings including Section IV of the Constitution and all in your By-Laws on meetings.

Section 1 is the same as Section 5.

Section 2 covers the annual elections, including the appointment of Nominating Committee and Tellers. There should never be less than four tellers unless the voters and the offices to be filled are very few.

Section 3 is the same as Article IV of the By-Laws with the change of a very few words.

Section 4 provides for the quorum.

Article VII is the same as Article V of the By-Laws.

Article VIII is the same as Section VI of the Constitution, corrected as to wording.

(Signed) MRS. H. R. KENASTON, *Chairman.*
ZADA M. COOPER.
Committee.

The above report, by her own motion as Chairman of the Committee, and seconded by Miss Bagley, was unanimously carried.

The By-Laws were adopted as read.

The next feature of the program was an address by Miss Harriet E. Vittum on "The Present-day Opportunities of the Woman Citizen of America."

Miss Vittum spoke of her activities among the foreign population, especially among the Polish people of Chicago, and in their own country. She attested to their loyalty here, and their patriotic devotion to this country, and their own. She spoke of the privations and sufferings of the starving mothers and children, and the heroism of their soldiers.

Miss Vittum contrasted the soldiers who had returned from France with those who were now going forward to fight in the cause of Democracy. Summing up the great work in which the United States enlisted, she pointed out the duties of the men and women of this country, and concluded her patriotic address with an appeal for more general vocational training for boys and girls so that they will be trained for filling positions they are best suited for. There was no dull moment throughout the address which held the attention of the Section.

Upon motion duly seconded and carried, the Secretary was instructed to send Miss Vittum a letter of thanks for her very able address, thereby more fully expressing the deep appreciation for the inspiration and added strength for our duties and our privileges.

President Cooper appointed the following committees:

Nominating Committee: Mrs. Gray, Mrs. Eberle, Mrs. Christensen, Mrs. Wakeman and Mrs. Lindvall.

Committee on Resolutions: Mrs. Thatcher, Miss Bagley and Mrs. Kebler.

Miss Bagley was invited to preside during the reading of the report of special Committee on Sorority.

Miss Zada Cooper, Chairman, presented the report as follows:

REPORT OF COMMITTEE ON SORORITY.

For the benefit of those who may not have been present last year, and in order to refresh the memories of those who were, perhaps a word about the reason for the appointment of this committee will not be amiss. Dean Jordan, of Purdue, in conversation with a group of women,

had told them that the women students at Purdue had expressed to him the wish that they might know women pharmacists elsewhere, and wondered if there might not be some sort of an organization that would join together the women pharmacists all over the United States. Dean Jordan was invited to speak to the Women's Section and did so, suggesting that the Section take the matter under consideration. It was decided that a committee should be appointed to investigate the whole question and report at the 1918 meeting. The incoming officers and Executive Committee were named as members of this special committee. Our task, then, was to determine the advisability of an organization and, if found advisable, the form it should take.

It seemed to me that the opinion of three groups of people would help us to judge wisely. Women pharmacists should be able to tell us whether they desired it, whether they felt a need for a closer affiliation. The deans of colleges should know the needs and desires of women students and, lastly, women students themselves would have an opinion.

In accordance with this impression I wrote to about fifty people, half of them deans of colleges, most of the others women who had been pharmacists for several years. Not all responded but a very good percentage of them was heard from. Almost without exception both men and women were absolutely opposed to a separate national association of women pharmacists. Many excellent reasons were given which I should like to quote if time permitted. Since the members of the Committee were nearly all of this opinion that part of the question seemed happily settled. Personally I was much pleased at this result, for I am so unalterably opposed to segregation of professional women that, had the opposite opinion prevailed, I must either have withdrawn from the Committee or have presented a minority report.

The other alternative, a sorority, did not meet with the same unanimity of opinion, yet the majority favored something of the sort. A word should be said about what the women students with whom I corresponded thought about it. These were mostly representatives of local pharmaceutical sororities or clubs. Without exception, naturally, they favored a sorority. I am sure, however, that this feeling is not unanimous, for in one way and another I found that at some colleges they were opposed or indifferent. In order to assure you that I have tried to be perfectly fair in summing up these opinions, I should, perhaps, confess that before I undertook the investigation, I was opposed to a sorority, at least of the ordinary type During some years' connection with a University I had had considerable opportunity to observe, as an outsider of course, the effects of academic sororities, and, I had come to believe that the disadvantages outweighed the advantages and I was not blind to the fact that there were many advantages. Now, however, I was forced to change my mind. Many reasons entered into that change of front, not the least of which was the conclusion that pharmaceutical sororities were bound to come, in fact were already here. Therefore, it seemed the part of wisdom to approve the plan and try to shape the destiny to the very best of our ability, especially when I had always had a vague unexpressed feeling that it would be a pleasure to be bound by closer ties to other women pharmacists.

To go back a bit, before this correspondence was well under way I found that the Committee on Activities of Students and Alumni of the American Conference of Pharmaceutical Faculties, of which I was a member, would consider this very question also. It seemed to me that that body was perhaps the proper one to organize a sorority, that the Section, perhaps, could do no more than approve or disapprove the idea or, possibly, act in an advisory capacity. I continued my work, however, and submitted my findings to the Conference Committee as well as to the Women's Section Committee. The members of the Women's Section Committee, who expressed themselves, had agreed from the first to approve of the establishment of a sorority, but they also gave me permission to await the decision of the Conference before framing my report.

The Committee on Activities of Students and Alumni of the Conference at the meeting of Monday, August 12, 1918, made the following recommendation: "That the Committee be instructed to proceed at once to the organization of a pharmaceutical sorority in the Conference schools. The Committee, during the last year, has found the need for such, and, in a number of schools, local chapters have been formed in which we believe we have nuclei for a future sorority system. The part this Committee will play will be largely an advisory one. In this way we believe the faculties can wield an influence in shaping sorority destiny which will be well worth while."

The Conference adopted the recommendation. Therefore your Committee recommends that the Women's Section endorse the action of the Conference.

Respectfully submitted,

(Signed) ZADA M. COOPER, *Chairman*,
MRS. H. R. KENASTON,
Committee.

Mrs. Kebler moved, seconded by Mrs. Whelpley, that the report of the committee as read be endorsed. Carried.

No further business appearing the first session was adjourned.

Second Session.

The second session of the Women's Section, A. Ph. A., was called to order by the President, Miss Zada Cooper, at 2.00 o'clock P.M., August 14.

Mrs. Isam M. Light sang most charmingly two selections; Mrs. Fred P. Kennedy entertained the Section by rendering a number of delightful musical poems.

President of the American Pharmaceutical Association, Dr. A. R. L. Dohme, delivered an address on the subject, "Women of To-morrow."

WOMEN OF TO-MORROW.

Civilization can be measured by the respect shown woman. Tolerance has grown in history in direct ratio with the growth of the respect shown woman. Cave man, stone age man and bronze age man showed but little respect for woman and she was to all respects a man without any of his rights, positions or respect. He ruled her by brute strength because he was stronger. During the dark middle ages she was merely the bearer of children and the household drudge. Christianity was born at the time of Augustus Caesar; and at the height of the Roman Empire under Trajan and Marcus Aurelius it began to assert itself but people did not understand it. Then, when Rome decayed and the chaos of nations began, Christianity became dogmatism and theology and superstitution and we are only emerging from this dogmatic theology in this twentieth century, and we are far from out of it yet. We are not practising what Christ preached to-day and our religion is not hence to-day Christianity, but it is yet largely dogmatic theology. Through all this domination of the world by the church, during the past twenty centuries, man has dominated woman because it was part of the church dogma. Paul preached it but not Christ. Who says and does things in the church—in any church, but most prominently in the old or orthodox church, surely not the woman. If this is true to-day—it was more true every century as we go back. The hope of the dawn of a civilization when there will be no war and when there will be a brotherhood of man and woman lies in the advent of a real Christianity, which means a harmony of religions, a revulsion from dogma and theology, and when this comes woman will come into her own as the equal of man before the law, in the social order and in reality. This war may, and many think it will, bring real Christianity and real religion and with it, real peace, real progress and real brotherhood of man on earth. Personally, I hope and believe it will—when it does then will woman begin to play a figure and influence in history. Because of the war she is now filling places once filled only by men. She will have to do so to a greater extent in the future. Therefore the woman in pharmacy will henceforth become an element in pharmacy. It is a calling she can fill, as well as grace. The patience, accuracy, neatness and service called for by pharmacy count among woman's strong points. This looks lovely but let me warn you it has a darker and more sinister side. With these assumptions of the places of men will come two things: (1) Assumption of his responsibilities as the bread winner, and (2) consequent loss of that great respect and veneration of woman born of the fact that she was helpless, weaker, dependent and *mater familias*. Woman cannot expect to assume the places and duties of man without losing proportionately the high respect in which she is held. If she becomes man's competitor she must assume the burden of the knocks and rough edges of competition. Then comes the suffrage, which will doubtless be voted, and this will still further accentuate the rough contact and consequent loss of the finer instincts of respect once held by the beloved wife, mother and woman. Therefore the woman of to-morrow has a great problem to face and decide for her sex. Will she remain the woman whose duty and instinct is to bear, love and rear the people of

to-morrow and retain the love and admiration and highest respect of man, which means the amenities and courtesies of life, or, will she assume the place of and knock elbows and shoulders with men in the market places of the world and become a skirt-wearing man who has lost all those finer attentions and devotions to-day lavished upon woman? The woman of to-morrow must, if she can, solve the problem and cut the Gordion Knot so that she may come into her own as a power for good and progress in the world and yet with all remain the loving helpmate and highly respected wife and mother of man. Unless she can solve the problem and secure her independence and active agency for good in the world without losing the respect of mankind as a loving helpmate, society of to-morrow will be a hopeless and a sorrowful thing, holding out little but a reversion to a lower type of civilization and culture.

The world will be revamped and reconstructed after this war. The world cannot have gone through the ordeal of fire, destruction, hatred and untold suffering without some good coming out of it for those who have suffered and died that we might live and make the world safer for their orphaned little ones to live in. The war represents the last dying gasp of feudalism and the rule of the many by the rich and powerful few or, as it is often put, the rule of might against right. The holocaust will have cost millions of lives of men, and woman will more than ever preponderate in numbers in the world. Why should she not have her influence in the remodeling and revamping of government and society? If there ever was a chance for woman to assert herself for the uplift, salvation and progress of humanity, that time is to-morrow—the near future. Woman does not love war and does not want war. She does not want to give up her husband, brother or son to be brutally shot to death in droves like cattle. If the women of this country or any country had been asked whether their country should or should not go to war—the answer would never have been in doubt for one instant. Instead there would have come from the forests of Germany, the meadows of France, the hills of England, the plains of Russia, the valleys of Italy, and the fields of the United States, the never ending sound of N O—a thousand times N O—and it would have come so loud that it would have echoed down the ages to come so that the hills and mountains of the whole earth would have heard it even down to the last generation. Therefore women of the Women's Section of the A. Ph. A., women of this great country of ours, women of all nations, women of the world—all of you women of to-morrow rise in your might, rise in your dignity, rise in your power that you hold over men, for the love we men bear you and I hope will always continue to beat you, and make your influence and your strength felt in the world of to-morrow and so help direct and steer the ships of state of the world that, after this war has established democracy on earth forever and the brotherhood of man and the sisterhood of nations and destroyed autocracy and the rule of the many by the few once and forever, the ugly tentacles and the hideous fangs of war shall be buried forever, never to be resurrected.

Then followed an illustrated lecture on "Community Work in Conserving Cereal Foods and Protecting the Public Welfare," by Dr. L. F. Kebler, Chief of the Drug Division, U. S. Department of Agriculture, Bureau of Chemistry.

COMMUNITY WORK IN CONSERVING CEREAL FOODS AND PROTECTING THE PUBLIC WELFARE.*

A STEREOPTICON LECTURE.[1]

Suppose I should ask this assembly to name one of the leading industries of your community, what would your answer be? Suppose we should address a letter to the various communities in the world and ask what constitutes their chief industry? A variety of answers would undoubtedly be received. Some would say automobiles, others cotton, wool, farming, iron, steel, mining, etc. Some might mention some phase of the food problem, but the food industry as a whole would hardly be thought of. It is such a common industry and is with us all so large a

* Requested and approved by the U. S. Food Administration. Prepared by Dr. L. F. Kebler, Bureau of Chemistry, U. S. Department of Agriculture.

[1] Delivered before the Women's Section at the Chicago meeting of the A. Ph. A. Eighty slides were shown by the lecturer, illustrating the related points, and these are indicated throughout the address by the subjects presented.

part of the time, that we seldom think of it as an industry. We eat food three times a day when we can get it. Indeed, we spend the greater part of our efforts in producing, transporting, preparing, conserving and consuming our foods, so that we may live and have our being. With some the getting of food constitutes a veritable struggle for existence. By far the greatest amount of the labor on our farms is expended in raising, harvesting and marketing foods for man and the domestic animals.

The chief, ultimate purpose of all farm implements (plows, harrows, reapers, threshers, etc.) is for food production. All kitchen supplies and utensils and the capital producing them are parts of the same industry. Immense factories for preparing foods (products valued at $2,300,000,000) exist in various sections of the country. Great elevators are constructed to hold our grains. A large amount of our transportation equipment is utilized for shipping foods from one community to another. Food constitutes the greatest industry of all peoples. At present it is an international problem. The capital invested in the food industry in the United States alone (one hundred billion dollars) is greater than that invested in many of the other largest industries combined. The value of the cereals alone in the United States at the farms for 1917 is estimated at eight billion dollars. This alone certainly represents some investment. We are not only the greatest food-producing nation in the world but the largest wheat-growing country as well. Russia comes second. We produce considerable for export. England, France and Italy even in pre-war times did not grow enough wheat to meet their own needs. Considerable was imported. In the present war the demand for imported wheat is very great.

Man derives the greatest part of his nutrition from the grains. The importance of the cereals in the life of a nation is therefore clearly evident.

Cereals (wheat, corn, rye, rice, etc.), for the most part, are derived from the grass family. The only important exception is buckwheat. Most of us do not look on wheat, corn or rye as grassy in nature, but the botanist so classes them.

One or more of these grains are grown in all parts of the world. Some thrive best in cooler weather (oats), others in warmer climates (rice). The part of these grasses used for human food is the seed. Herbivorous animals, however, consume all parts of the grasses as food to make foods for us. This illustrates how closely related is the source of food for mankind and the lower animals. We do not eat grass ourselves, but we do eat it by proxy. We make the milk-and-meat-producing animals manufacture it into foods for us. In the grains of all grasses is stored up nourishment for the young plant for use during the early days of its career. By the foresight of self preservation the parent plant, in providing for its young, produces a tremendous food supply. By robbing the young plants of this food man appropriates to his own use and the use of food-producing animals, a vast amount of nutrition. From this it is evident that the nutritive elements required by man are similar to those of many of the young plants. In the final analysis, man and the lower animals are dependent on plants for their foods. After the grain plantlet is well established it possesses the power of extracting its food from the earth and air, but in order to get a start in life there must be available for ready use certain well recognized food substances. From the nature of things it is quite evident that grains contain these various essential nutritives called proteins, carbohydrates, fats, vitamins and mineral matter.

FOOD NUTRIENTS.

Proteins.—Egg albumen, red and white meats, casein, gelatin, gluten, zein, legumin, fish meat, peptones, etc.

Carbohydrates.—Glucose, dextrose, grape sugar.—Fructose, fruit sugar; sucrose (ordinary sugar), lactose, milk sugar; maltose, malt sugar; starch, corn, wheat, potato, rye, rice, etc.

Organic Fats.—Butter, lard, beef fat, fowl fat, mutton fat, fish oil, oleomargarin, olive oil, cottonseed oil, peanut oil, corn oil, sesame oil, almond oil, cacao butter, cocoanut oil, nut oils, etc.

Vitamins. Food Hormones; Food Accessories.—Water soluble; in cereals, fruits, vegetables, meats and milk.

Fat soluble; in butter, egg yolk, roots, leaves, milk, cod liver oil.

Inorganic or Mineral Matter.—Water, compounds of calcium, magnesium, iron, sulphur, phosphorus, sodium, potassium, chlorine, etc.

These food elements vary considerably both in character and amount in the different cereals, but their food- and health-giving values are very similar. Wheat contains more protein than corn, and the two differ materially in character. The fat content of oats is considerably greater than that of rice, but their food value, measured in calories, is about the same, weight for weight.

The proportion of the several constituents contained in each cereal has been carefully determined by chemical analysis, and the order of their relative richness can readily be grouped. The protein content of wheat, rye and oats is about the same. Rice, corn and millet contain materially less. The fat content of oats and corn is much greater than either rice or wheat. In the carbohydrate content, rice takes first place, oats and buckwheat rank below it.

Barley is among the first in mineral content, while polished rice represents the lowest.

The preponderance of carbohydrates in cereals indicates that they should be combined in our diet with other foods, richer in fats and proteins. We have instinctively learned to do this. Our bread is spread with butter. In the case of sandwiches the protein and fat content of bread are enhanced by the addition of butter, meat, cheese, etc., as the case may be. Puddings are enriched with protein and fat by the use of milk, eggs and butter or other fatty material. Other forms of cooking show by natural selection of many years, that there is a natural tendency to balance the food nutrients required by the system. When there is a deficiency of certain food principles the system seems to have a way of making its wants known. The need of salt or water are cases in point. Cattle will travel miles and miles to get them.

A
B
C
H
A - Germ (protein, oil, minerals, vitamins)
B - Flour cells (gluten, starch, etc)
C - Aleurone cells (minerals, vitamins, etc)
D - Innercoat of bran (minerals, fiber)
E - Color layer

FIG. 1.

Wheat is by far the most important cereal used by man. The Chinese consider it a special gift from Heaven. The cultivation of wheat is pre-historic. It antedates the Egyptian monuments and is more ancient than the Shepherd Kings and the Hebrew scriptures. It grows in all temperate regions of the earth. There are many varieties of wheat, red wheat, white wheat, hard wheat, soft wheat, starch wheat, winter wheat and spring wheat. In normal times we consume annually about five bushels per capita. It is the great bread-making grain of the world. Bread is the very basis of the food supply of humanity and the cereal most generally and satisfactorily used is wheat. It possesses certain basic characteristics which will be considered in connection with bread making.

There is a great shortage of wheat at present in the allied and neutral countries of Europe. If we expect, as we do, to win this war for permanent peace and humanity and make this world a decent place to live in, America must help supply the allied armies and their industrial workers, their women and children, with a part of their food needs. This problem is second to none for the salvation of our country. Hungry men are not effective fighters, nor will men continue fighting with starving families at home, if by refusing to fight they can feed them. The failure of Russia is a notable example. A diet satisfies or fails in proportion to the bread it contains. Bread therefore is no longer figuratively the "Staff of Life." It is in reality.

It is impossible to know too much about the cereals and wheat in particular. On cutting a grain of wheat lengthwise into thin slices and examining them under a microscope of low power, three distinct parts can be readily made out. They consist of an external covering or skin, an internal substance or kernel and the germ. The skin or outer envelope, or "hull," as it is sometimes called, goes largely to make up the bran and is composed mainly of cellulose, impregnated with mineral matter. It contains the coloring matter of the wheat and is the protective coating of the grain of which it makes up about $13\frac{1}{2}$ percent. The kernel, also called endosperm, consists primarily of starch and the antecedents (gliadin and glutenin) of gluten. It makes up about

85 percent of the grain and furnishes the bulk of the white flour of the market. The germ is essentially the young plant and represents about 1 1/2 percent of the grain. The cells of the germ contain certain ferments or enzymes, which convert the insoluble starch and nitrogenous matter into soluble material capable of being absorbed and used by the young, growing plant. The germ is usually discarded in the manufacture of ordinary wheat flour, because the oil contained therein tends to turn rancid, thus making it difficult to keep the flour over an extended period of time.

A still higher magnification of a section of wheat grain (mounted in water) brings out the various parts more distinctly. Now we can see the bran layers, the starch granules and the gluten particles.

The chemical composition of the whole grain and the three component parts described above have been carefully worked out. The germ is characterized by its richness in protein, fat, and mineral matter; the kernel by the abundance of starch and protein it contains and the bran by the preponderance of mineral matter, cellulose and nitrogenous material.

The relative proportion of starch and protein differ in various kinds of wheat. Those grains which look so translucent and horny, are, as a rule, high in protein matter, while the grains which are soft, opaque and floury, contain less gluten and a larger proportion of starch.

Certain climatic conditions are favorable for hard wheat, others for soft wheat. The semi-arid region west of the Mississippi river, in both the United States and Canada, produces hard wheat, while soft wheat is largely grown in the states east of the Mississippi. Spring wheat belongs to the hard wheat variety, while the winter wheats are generally soft in type.

Whole wheat is not largely used as a food, although there are a few whole wheat proprietary foods placed on the market and greatly relished by many. A useful food may be prepared by soaking the berries in water, then boiling and finally mixing with milk and sugar and other suitable ingredients. This represents an old and very nourishing dish called "frumenty." It seldom graces our tables at present, although there may be some here whose environments have been such as to have actually enjoyed this dish.

At present the common procedure is to mill the grain into wheat flour by removing the germ and tough skin, then grinding the rest. This is easily done by the present elaborate process of the modern rolling mill. By rejecting the germ and bran the miller undoubtedly discards some of the most valuable food constituents of wheat. It is alleged this is not the miller's fault, but the caprice of the consumer, who has a natural or acquired aversion for dark bread. The aversion is claimed by some to be largely a matter of education.

The millings before the war varied from 56 percent (the finest patent flour) to 75 percent, in this country. That is, from each 100 pounds of wheat were made from 56 to 75 pounds of white, creamy flour. At present it is required to extract 74 pounds for each 100 pounds of wheat used. It is claimed that this flour is not quite as white or as good as that formerly made, but to the average consumer there is little difference excepting that he can get it only on a 50–50 basis. In England, at the present time, millers are required to make from 88 to 90 pounds of flour for each 100 pounds of wheat used. In France the extraction required is about 85 pounds and in Italy 90 pounds.

The bran is tough and fibrous and contains the coloring matter of the wheat. The miller therefore who is required to produce 85 to 90 pounds of flour from each 100 pounds of wheat can not produce as white a flour as when the bran is completely eliminated. He will furthermore be unable either to make quite as fine (size) flour or, if he does make as fine a flour, he does it at a little more expense.

The fibrous, branny material is not so easily or largely digested as the ingredients generally contained in patent wheat flour. This is one of the alleged objections raised to the use of whole wheat flour. It should be remembered, however, that the system needs a certain amount of indigestible material (roughage, ballast) to keep the bowels in good condition. This is very important. If all of our foods were entirely digested or without any practical residue, as in the case of sugar, starch, fats, meats, etc., our bodies would sooner or later be in an impaired state of health. The body also needs a certain amount of mineral matter to keep the various processes working smoothly. This is particularly true in the case of children. It is claimed by some that the deficiency of lime in our foods lowers our resistance to disease, particularly tuberculosis, which is so common in young life.

During recent years it has been found that certain substances, hitherto unknown, play a very important role in promoting growth and maintaining health. We do not know exactly what they are as yet, but for the present they are called vitamins, food accessories and food hormones. There are fat-soluble and water-soluble vitamins. Small amounts of both are required. All cereals are rich in water-soluble vitamins but poor in fat-soluble vitamins. The vitamins are contained in the outer layers of the grain and the germ. These are discarded in the making of white flour. They must therefore be obtained from other sources. Whole wheat flour contains the water-soluble vitamins. They are also present in fruit and vegetables. One or more of these must be included in the diet. Man can not live on white flour and pork or polished rice and fish and maintain health. The danger of mineral or vitamin deficiency need not be feared when an ample variety of food is eaten, and particularly is this true when there is an abundance of fruit and vegetables.

Wheat flour contains only a part of the mineral matter present in wheat. The greater proportion is in the offal which includes a number of fractions known in the trade as "red dog," "shorts," "middlings" and "bran." It is therefore clearly evident that if Graham flour is used in the manufacture of bread, a larger proportion of mineral matter will be taken into the body.

In order to make flour available for food purposes, cooking or baking in some of the many forms practiced must be resorted to. The simplest procedure is to mix the flour and water into a dough and bake. This makes a hard biscuit, difficult to masticate and harder to digest. Man was therefore early confronted with the necessity of converting flour into products that are light, porous and more easy of digestion. The problem was solved ages ago. Leavened bread was known to the Egyptian in the time of Moses. It consists in causing a gas to develop in the doughy mixture, converting it into a spongy mass, which is subsequently baked. Now in order to make bread of the above character, the flour to be used must possess the property of retaining or enmeshing the gas generated. This quality is inherent to the greatest degree in wheat flour, which contains several proteins, collectively called gluten. Gluten possesses the peculiar property of becoming viscid and tenacious when mixed with water. It also possesses sufficient coherence and stability, so that when the viscid, doughy mass is inflated or blown up with gas, it holds its spongy form until set by baking, instead of collapsing and allowing the gas to escape. Gluten also materially assists in retaining the moisture in the bread. It is therefore plainly evident that gluten plays a very important part in the making of bread and that wheat is the cereal par excellence in the economy and welfare of man. Patent wheat flour generally contains a larger percentage of gluten than does Graham flour. It also contains a minimum of substances which tend to inhibit the best leavening results. For these reasons it is possible to make a bulkier bread from white flour. A loaf of bread weighing one pound, made from white flour, is as a rule somewhat larger than a loaf of bread weighing one pound made from Graham flour. Considerable of this difference in bulk can be overcome by carefully watching the process of leavening and kneading, and baking the loaf in just the right manner. It has been shown that bread made from flours milled up to 80, 85, 90 and even 95 percent, can be made very nearly as bulky as that produced from a 74 percent flour.

The nitrogenous constituents of the other cereals such as barley, rice, corn, oats, etc., are materially lacking in agglutinating properties. The proteins do not become materially viscid when moistened and consequently these cereals are not well suited for bread making, in and of themselves. They can be mixed in certain proportion with wheat flour and make very acceptable breads. While the best kind of bread is made from wheat flour or a mixture of wheat and other cereal flour, yet larger quantities of lower grade breads are made from the flours of rye, barley, oats, corn, rice, etc.

The process for making bread light, spongy and porous, is called leavening, lightening with gas. The questions that now naturally present themselves are, what is the gas used and how is it produced? Two methods have long been in vogue, namely fermentation and baking powders. The former is by far the oldest and best. Its origin is lost in antiquity. Fermentation is due to the growth of small plants called yeast, which are capable of breaking up sugar into alcohol and carbon dioxide gas. Two pounds of sugar give about one pound each of the gas and alcohol. The gas causes the dough to swell up.

In order that yeast may produce the best results, that is the greatest amount of gas, it must grow vigorously. If its action is weak, fermentation is slow and a sour, unpalatable, heavy bread is likely to result. Such bread means a loss of food which should be carefully avoided.

Like all other plants, yeast requires air, water, protein, carbohydrate and mineral matter to build up its own structure and reproduce its species. Yeast plants, like children, require food to grow. It is plainly evident that yeast, during the process of fermentation, eats up a part of the food elements in the flour. Careful studies have shown that this amounts on the average to about 3 percent (1 barrel in 33). The tremendous amount of actual food consumed by yeast can hardly be realized. Thousands of gallons of alcohol are produced during the process of fermentation and later lost while baking. Numerous efforts have been made to recover this alcohol, but without satisfactory results. The food eaten by the yeast cells is lost.

The next question that prompts itself is where do the yeast cells originally come from? If we expose dough to the air these plant cells will ultimately find their way into it and start to grow and multiply. From this it would appear that yeast cells are floating about in the atmosphere. Yeast spores are in fact found about us on every hand.

During the time the dough is exposed, other small plants called bacteria also find their way into it and begin to grow. These bacteria frequently cause acids to develop so that the dough not only ferments but may become sour. For want of something better this sour, fermented dough was early used in the making of bread. It was called "leaven." A little of it was added to the fresh dough and the yeast present began to grow with greater or lesser rapidity, depending upon conditions. Most of the batch was baked, but a small part was set aside to start fermentation in subsequent batches of bread. Other forms of yeast were used. Some of us still have in mind the product known as "jug yeast." The only part played by the jug was that it served as a practical, efficient container for developing this yeast. From the nature of things it was evident that the various forms of yeast available would prove unsatisfactory. The housewife experienced many difficulties in keeping her yeast good. It often happened that the yeast batch was not in the best condition when needed for bread making. To prepare a new batch would require considerable time and labor. An accommodating neighbor is then a friend indeed.

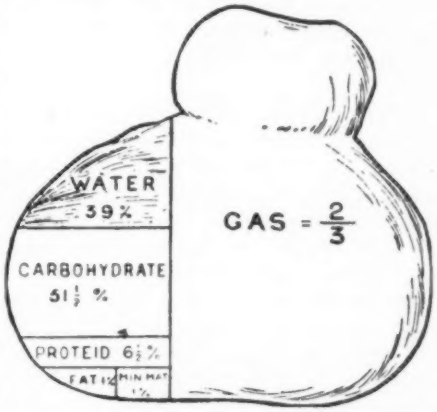


FIG. 17.—DIAGRAMMATIC REPRESENTATION OF THE COMPOSITION OF A LOAF

FIG. 2.

Salt-raising bread is dependent upon a new and independent spontaneous fermentation for each baking. In its preparation there is added neither yeast nor a portion of fermented dough from a previous baking. It is therefore a matter of chance whether a good bread will be produced or not. There is, however, less likelihood of failure in places where the process has been in vogue for some time. The fermentation is started by mixing corn meal, salt and hot milk into a stiff batter and allowing it to stand in a warm place from 15 to 20 hours, or until fermentation is well established. The mass is then mixed with flour and water to produce the sponge. Salt is added to retard the growth of undesirable bacteria. It is certainly poor economy to use this method at any time and particularly now.

In order to overcome some of these difficulties, dried yeast cakes were provided. They are prepared by mixing strong stock yeast with corn meal and drying. These yeast cakes are of great service in places where compressed yeast can not be obtained. Old yeast cakes should not be used. They are liable to be weak or moldy, and result in the production of a low grade of bread, which means loss of food. Compressed yeast, known to all of us, represents the purest form of commercial yeast and should be used whenever available. In concluding the fermentation process for making the bread, the idea of saving food or avoiding the making of sour, sodden, soggy, unpalatable, indigestible wheat food products, can not be too vigorously emphasized.

The inevitable waste in making bread by the method of fermentation has received careful and diligent study. The obstacles to be overcome are numerous. In spite of all the work that has been done, it is still the most satisfactory and acceptable process. Ordinary bread made by other than the fermentation process is not so highly esteemed. Fermentation produces cer-

tain aromatic substances which impart a sweetish, agreeable flavor to the bread. Yeast also introduces some of the desirable vitamin into the bread made from devitamined flour.

The chief outcome of the various investigations have resulted in the development of a variety of baking powders. Baking powders consist of mixtures of various chemicals. They are quite generally used for simple, quick baking, including such foods as cakes, biscuits, gems, pancakes, etc. Self-raising flour contains some form of baking powder. There are many brands of baking powder on the market and they are quite generally employed for certain forms of baking. We have cream of tartar baking powders, alum baking powders and phosphate baking powders.

Aerated Bread. A variety of bread was introduced a number of years ago which was raised by means of mechanically injecting the gas into the dough. The method has not proven successful commercially. The cause for its failure is probably due to the fact that the bread does not possess the flavor or odor which appeals to the public taste. The psychology of foods plays a very important part in the life of a nation and must be reckoned with in matters of diet, if we expect to make progress.

MAIZE. INDIAN CORN.

Next to wheat, the most important cereal used for human food in the United States is maize. It is America's greatest cereal crop and our most important substitute for wheat. It is the great stock cereal. For the year 1917 we grew over 3 billion bushels, an average of 26.4 bushels to the acre. The boy farmers of late have shown us that this is less than a third of a crop. The possibilities for materially increasing this valuable cereal crop are therefore excellent.

We are told that there are several hundred varieties of corn, but for our purpose they may be grouped under three heads, namely: Field corn, sweet corn, and popcorn. Field corn is undoubtedly the most important and most generally used substitute for wheat in the United States. It is a staple article of diet. Some classes use it more largely than others. Our own Dixie people have learned to prepare many choice dishes from it. Ireland and Italy use it largely. It is literally the staff of life in Mexico, where the crop is of greater money value than the output of that country's famed gold mines. One probable reason why corn is not used more abundantly by some is because it is often associated with pellagra, a disease common among the poorer classes of the Southern states. Corn was looked on for years as the cause of this disease in some way, but the idea has been exploded in recent times.

The general structure of the corn kernel is similar to that of wheat. An examination of the kernel shows that it consists of four different parts. These may be designated as the coat or hull, the hard, glutinous layer underneath the hull, the chit or germ, and the starchy matter constituting the chief portion of the kernel.

The fine separation of the different parts of the corn by mechanical means has not been developed to the extent obtaining in the case of wheat. Like wheat, corn is prepared for food in many different ways. We have the white and yellow corn meal. Some prefer one to the other, depending upon custom. The food value is apparently the same. On the whole, corn is claimed to possess as much food value as wheat and this applies to all corn, whether flinty or starchy, or white or yellow, or any other color.

The protein (zein) of corn differs materially from that of wheat in both chemical and physical properties. The particularly s riking feature is that zein does not become viscid or sticky on moistening. A mixture of corn flour and water does not produce a doughy mass. It can not be inflated by fermentation. This restricts the use of corn meal in the preparation of a desirable light bread.

Corn bread, corn cakes, and corn buns are eaten in large quantities. They are made from a number of mixtures and are raised to some extent by the common leavening agents; that is, yeast, baking powder and baking soda. Wheat flour is a common ingredient of these mixtures. They represent excellent and tasty dishes.

Johnny cake was originally a mixture of stone-ground corn meal, water and salt, baked into unleavened cakes. The name Johnny cake is frequently applied to a mixture of corn meal, milk, eggs, butter and baking powder. The complaint is at times heard that Johnny cake is more expensive than wheat bread because of the cost of the original ingredients composing it. From the information available it would appear that the original Johnny cake has been materially changed but that the old name has been retained. The expense of what might be called

modern Johnny cake is due to the addition of costly ingredients, not really a part of the original mixture. It is, however, not so much a question of the increased cost of the Johnny cake as it is a question of saving wheat for helping in this war. We must be willing to deny ourselves until it hurts, even our pocketbooks.

Hoe Cake.—Hoe cake is similar to old time Johnny cake. It was originally baked on a hoe, hence the name.

Pone Cakes (Corn pone).—A bread made from corn meal, with or without the use of milk and eggs.

Corn mush, corn pudding, or hasty pudding is made by gradually adding corn meal to hot water with vigorous stirring so as to avoid lumping. This mixture is often eaten either warm, cold or fried, with milk, syrup, butter, etc., as custom, means or habit may decree.

Corn Starch.—Starch made from corn.

Glucose.—Commonly made from corn, but can be made from other starch-bearing products.

Corn grits is corn hulled and broken.

Hominy is hulled corn, broken and soaked, then cooked for table use.

Corn Flakes.—During recent years they have come to play an important part at our breakfast tables. They are made by treating grits or broken corn by special malting processes, rolled while moist and toasted on continuous moving belts in large ovens. The flakes are nutritious and represent an excellent article of food.

Large amounts of alcohol and alcoholic beverages are made from corn. Its utilization for the latter purpose has been restricted by law as a conservation measure. It is plainly evident that the uses of field corn are many.

Sugar corn is a specially developed variety of maize of high sugar content, eaten while the starch is still soft. It is cooked and eaten while in the milk and is an esteemed delicacy of our tables. Who has not heard of our delicious roasting ears? Sweet corn should be eaten or cooked as soon as possible after being collected because of the rapid reduction of sugar content after being removed from the stalk. Who has not eaten some of the insipid corn purchased on the market? The ears may be either cooked in hot water or roasted. Roasting ears are best eaten hot. Enormous quantities are canned every year. Our Maine canned corn is known far and wide. Sweet corn is also dried while still unripe. When cooked and served with milk it forms a very tasty dish with a flavor all its own. Drying is a most excellent way to save this very important food at small expense. This feature has not been developed to the extent that it should be in these strenuous times. Sweet corn is of high food value. By proper planting this fine vegetable may be available in Washington from July to frost time, about the middle of October. Further north the period of time is shorter and is lengthened as we go south.

Popcorn is a highly prized food. It is largely used as a delicacy in this country. This variety of corn is hard and consists of small grains, which have the property of exploding when heated, resulting in a great enlargement of the starch grains. Popped corn is a delicious, attractive, edible food, particularly prized by children. Popcorn and apples call to mind fond recollections of childhood days when winter evenings were spent popping corn and eating apples around the fireplace.

Appeal after appeal has been made for us to eat more corn and save the wheat for the brave men at the front, fighting for our beloved land and our allies. Some of us have been wont to demur and ask why should we thus deny ourselves? Can not the allies eat corn as well as we? The reply is that Italy has been eating large amounts of corn and will eat still more. The corn consumed in England is rapidly increasing. In fact the food that these two countries are eating as bread would hardly be recognized by us as bread. A certain speaker from England said, "When I took ship to this country, it was almost impossible for me to stop eating bread. It was such a superior article to what we are eating in England." These two countries are therefore doing their bit in these matters.

Now, how about France? The story there is different. It is the land in which the battle rages and has raged for several years. It is where our boys are fighting to dethrone autocracy. Many of the best farms are laid waste. They can not be used to grow food. Implements and fruit trees are destroyed. Farm tools must be imported and fruit trees grown before food can be produced. There are no mills in France to grind corn, fuel is very scarce, coal $75 a ton. In pre-war times bread was generally made and baked in large bakeries. Very little home bread

baking existed. Corn bread, in order to be satisfactory, must be eaten hot, soon after it is baked. Re-heating destroys its palatability. French women do not know how to bake corn products. To make acceptable corn dishes requires practice and experience. In the process of learning there is always more or less waste. All of the able-bodied men are either at the front or engaged in transporting supplies for the army or busy manufacturing ammunitions for war. No able bodied man force is at home. Only the aged, infirm, maimed, and the hundreds of thousands afflicted with tuberculosis are there to help the women. It can therefore be seen that to the lot of the women has fallen a stupendous task. They are compelled not only to take care of the home, if there is any left, but to raise the food, do the farm work, plow, sow and reap. Is this not enough? Would you now impose upon them the added task of learning to cook new foods, when they are already bowed down with sorrow and grief and untold burdens? Can we spare the food that must necessarily be wasted during the process of learning? Finally, where are they going to get the bake ovens and the fuel to do the baking with? It is no longer a theory that confronts us, but a condition. Can we conscientiously add to the burdens of these noble, self-sacrificing women? The French people came to our rescue in times of stress and trouble. They have and are acquitting themselves well in the present conflict. They have been doing far more than their part to make it possible to preserve liberty to the world. They saved Europe from autocratic oppression. Are we not willing to help a little by eating more corn that these gallant people may be able to continue in the struggle which will win the war for permanent peace and liberty?

OATS.

Scientists tell us that one pound of corn will give a little more heat (1685 calories) than a pound of oats (1670 calories), but on the whole oats may be regarded as the most nutritive of cereals. They are rich in fat, mineral and nitrogenous matter, but contain less carbohydrate than the other cereals.

Large quantities of oats are produced in this country and Europe. They grow best in cool, moist climates. On the farm we look on oats as horse grain. It is considered inhuman to make a horse work hard and not feed him oats. This cereal was not well thought of as a human food by many people in this country even 25 years ago.

The grain is closely invested with a hull. This hull, representing about 25 percent, is removed when used for human food. Horses are fed the unhulled grain. The oat grain with the hull removed is of the same general composition and structure as wheat. There is an external covering, the chit and the kernel proper. The protein of oats possesses very little agglutinating power. Oat flour therefore is not well adapted for bread making, but by mixing fine oatmeal with wheat flour, a good loaf can be produced. Oat meal when cooked in the form of porridge and eaten with milk forms an almost complete food. The various food elements of oats are well absorbed. For example, 95% of the protein, 93% of the fat and 96% of the carbohydrates are utilized. Oatmeal is sometimes stated to be heating, whatever that may be.

On account of the close adherence of the hull to the grain it is difficult to make a complete separation by the ordinary methods of grinding. The result is that a goodly amount of fibrous matter in the form of small particles is left in the meal. These particles tend to act as stimulants to the sluggish intestines, and are even irritating to some persons. The slight laxative effects produced by oatmeal are of service to persons suffering from habitual constipation, and persons leading a sedentary life. Rolled oats are considered superior to the ground material by some. The great pressure of the rollers seems to rupture the cell walls. The heat applied by means of the rollers seems to have a favorable influence on the fatty matter, rendering it less liable to turn rancid.

Oats are the basis of many of the "breakfast foods." They are usually sold to the consumer in package form. This adds to their cost but does not enhance their food value. It should be stated, however, that the handling of prepared oats in package form is believed to be more sanitary than the old time open barrel method. By reason of the fact that certain packaged oats have been heated and otherwise treated, they are more convenient to use and less troublesome to prepare.

RYE.

Next to wheat, rye is the great bread-making grain of the world. It is the principal supply of bread in many European countries and is used quite considerably in the United States by citizens of foreign birth. Rye resembles wheat in physical appearance, structure and chem-

ical composition. It does not contain the proteins that form gluten, as in the case of wheat, but it comes nearer doing so than any other cereal. Rye bread is more susceptible to leavening than any of the flours obtained from other cereals excepting wheat. Bread made from pure rye flour is rather dark in color, of a peculiar flavor, and apt to be dense, moist and tough. It keeps well, and if made from a fine flour, is about as digestible as bread made from wheat flour.

The composition of rye flour varies with the kind of rye used and its degree of fineness. The finest flours are deficient in proteins (building material) when compared with wheat flour, but somewhat superior to corn meal. More acceptable bread can be made from mixtures consisting of wheat and rye flours. In the case of breads made from the coarser flours, there is likely to be a material loss of the food unabsorbed by the system. This is particularly true in the case of the black bread (pumpernickel), the loss of which is said to amount to about 40 percent.

During pre-war times large quantities of rye were used in the manufacture of whiskey. This loss of food is conserved by a federal law forbidding the manufacture of ardent spirits.

BARLEY.

Barley is a great brewing grain. It contains a ferment (diastase) that converts starch into sugar. This cereal is comparatively rich in mineral matter and low in protein content. The mineral matter is located chiefly in the outer layers of the grain. Barley is used largely as a feeding grain, for horses and cattle. Distillers' and brewers' grains are also used for this purpose. Pearl barley is the whole grain with the hull removed. In this form it is used as a human food in the making of soups and barley water. Barley water is quite largely employed by physicians for diluting cow's milk in infant feeding. It does not possess much food value but is of service on account of the demulcent properties it contains. The gluten-forming elements are not contained in barley to any extent, in consequence of which dough made from the flour of this grain is not well suited to make good bread. Acceptable loaves can be prepared when mixed with wheat flours. Barley flour is used in preparing various dishes.

Malt is barley germinated artificially, then dried at a low temperature. It is used largely for converting starch into maltose sugar.

Malt extract is a syrupy saccharine mixture obtained from malt and used by physicians in the treatment of illness. It is also an ingredient in some brands of bread.

RICE.

Rice is not looked on as of great importance to us in the United States, but is in reality the "staff of life" for about one-half of the human race. It forms a staple food for China, Japan, Siam and the peoples of other oriental countries. Rice is high in starch and low in protein and fat. It is well adapted for the nourishment of those engaged in hard labor. Although rice offers sustenance for multitudes of people in the tropics, it does not seem to be so well adapted for those in the temperate zone. There are about 100 varieties of rice. They differ from one another, as in the case of wheat. We have red rice, glutinous rice, Carolina rice, round rice, etc. All rice is grown in damp, swampy soil, or on soil that can be flooded by irrigation. It is harvested and threshed like wheat. The grain in its natural state is of a brownish or yellowish or reddish color. We usually see it on the market as "pearled" or "polished" rice. This adds to its physical appearance but lowers its nutritive and health-giving value in some respects. In the polishing of rice, the bran removed contains the greater proportion of the ash and virtually all of the growing and health-giving elements, *viz.*, the so-called vitamins. Persons living on a diet restricted to polished rice and fish, are liable to suffer with the disease commonly known as beri-beri, a serious nervous condition, commonly called multiple or polyneuritis.

BUCKWHEAT.

On account of manner of use, buckwheat is generally considered along with the cereals, but botanically it does not belong to this group. It grows throughout the world, particularly in the temperate zone, in a cool, moist climate. It is a hardy plant. A profitable yield may be produced on soil too poor to grow most other crops. On rich soil we are liable to have a rank growth with a lodging of the grain. Buckwheat contains about the same amount of proteins and carbohydrates as corn, but less fat and more mineral matter. The seeds are enclosed in a dark, hard, indigestible shell, which is largely removed in the process of milling. The flour possesses a more or less dark tint, depending upon the amount of husk present. Buckwheat possesses some ag glutinating properties and the dough is therefore susceptible of a considerable degree of aeration

The dough may be leavened by either yeast, baking powder or baking soda and sour milk. When mixed with wheat flour very satisfactory bread can be made. The fermentation process is slow and not as commonly used as baking powder for the making of griddle cakes. If baking powder or baking soda and sour milk is used the cakes can be baked as soon as the batter is stirred up. Some brands of flour (self-rising) are mixed with the requisite quantity of baking powder to save the housewife this trouble. Buckwheat griddle cakes are highly prized in the United States. A too liberal eating of these cakes is liable to cause a rash in some persons. Undoubtedly some members of this audience will recall cases in their own experience or at least have had their attention directed to this condition.

MILLET.

It is estimated that the millets are eaten by about one-third of the inhabitants of the earth. Tremendous quantities are consumed in India, China, Japan, Africa and elsewhere. This cereal is, however, little used in this country for human food. During recent years the utility of the millets for this purpose has been carefully studied. They compare favorably in composition with the other cereals. The commoner varieties of millet are fox-tail millet, broom-corn millet, barnyard millet and Indian millet. The common sorghum belongs to this group, as does also kaffir corn. Some of the millets are well adapted for use in the fermentation or brewing industries.

It is clearly evident from the foregoing that the food value of the various grains is about the same. More appetizing, palatable and digestible dishes can be made from some than from others. Wheat easily takes first place in this respect. An effort has also been made to guard against loss by improper handling or treatment.

In our homes, aside from the children, who receives first consideration? Is it not the bread-winner, the one or ones who make the home possible? Who would not sacrifice to make father or mother, or brother better fitted to feed their loved ones or take care of and protect our homes? Not only are our homes threatened at present, but the liberty and safety of our country as well. Many a home has sent out a defender. They must all be fed with the best of food in order to fight the enemy effectually. If they fail, we are lost. The menace is at our very shores. We must be prepared to sacrifice and do our duty.

The President in the preparedness parade set a fine example of willingness to serve and forego all ostentation. He marched, carrying our emblem of freedom, like thousands of other citizens did in this parade. Millions of men and women are doing their bit. A million of the finest young men in the United States will soon be fighting side by side with the brave soldiers of the allies. Many of us can not fight, but we can help save food and thus help the fighters fight in this noble cause for liberty.

The greatest flag in the world is now before you. Ten thousand blue jackets are massed to form this living emblem of the American union. These noble boys, the flower of our homes, are laying down their lives, sacrificing their future, that old glory may float and proclaim liberty to the world.

What is more noble than an unselfish spirit? It is not so much what we have or give, but what we share, that shows our real character. Do you know that the world's food crop is short? Do you know that the United States is the greatest food-producing country in the world? Do you know that by our substituting other grains for wheat, by sharing we can help the fighters at the front and save people from starving? By saving a slice of bread a day, we make it possible to send wheat to the war stricken countries. We can not be too fully imbued with the grand principles laid down in the American's Creed, written by Wm. P. Page, which is as follows:

THE AMERICAN'S CREED.

> I believe in the United States of America as a government of the people, by the people, for the people, whose just powers are derived from the consent of the governed; a democracy in a republic; a sovereign nation of many sovereign states; a perfect union, one and inseparable; established upon these principles of freedom, equality, justice and humanity for which American patriots sacrificed their lives and fortunes.
>
> I therefore believe it is my duty to my country to love it; to support its constitution; to obey its laws; to respect its flag, and to defend it against all enemies.

I cannot more fittingly close this lecture than by quoting a few lines of a recent song which I am sure will appeal to you as it did to me.

"Somewhere in France is daddy,
Somewhere in France is he;
Fighting for home and country,
Fighting for liberty.
I pray every night for the Allies,
And ask God to help them to win,
For daddy won't come back
Until the Stars and Stripes they tack
On Kaiser Wilhelm's flagpole in Berlin."

A paper by Miss Elsa Schmidt was presented by Mrs. H. C. Christensen, entitled, "Women." Miss Schmidt contrasted the viewpoints of the past with the present, relating to women's activities. Formerly only a few lines were open to women, now there is no occupation in which they are not represented to a greater or lesser extent, and it should be the purpose of those now engaged to induce others to enter their chosen fields of activity. Pharmacy presented opportunities, she said, and the Women's Section should help in every way to augment the number of women so engaged. She pointed out that publicity was essential in the promotion; not only should articles on the subject be written for publications reaching the young women while they are in high school, but they should be interviewed and the possibilities in pharmacy explained to them; the interest of teachers and school officers should be enlisted to encourage their students to prepare for the study of pharmacy.

The last paper of the program was by Miss Helen E. Stouffer, on "Belladonna Culture."

Miss Stouffer presented her observations on belladonna culture in the drug garden of the Valparaiso Pharmacy School. She described the seed of belladonna and the difficulties encountered in its germination, due to the character of the seed-coat, which also sustains the vitality of the seed. Soaking the seeds in warm water for several weeks promotes germination. The seedlings are transplanted when 8 or 10 inches high.

Miss Stouffer stated that medium rich sedimentary loam was best suited for the plants. Lime, she said, improved the cultural qualities of heavy soil, or one tending to sour, but her experience did not show, as some contend, that the alkaloidal content of the plant was increased thereby.

The opinion prevails that sun-grown belladonna is richer in alkaloidal content than that of shade-grown plants. In Miss Stouffer's experience this did not prove out; she reports, that plants of the sunny bed, containing both flowers and some fruit, yielded 0.309 percent alkaloids, while those of the half-shaded beds showed 0.382 percent. Plants, containing neither buds nor flowers, of the sunny bed, yielded 0.356 percent of alkaloids, while those of the half-shaded beds, containing neither flowers nor fruit, showed 0.416 percent. Her experience is that just before flowering is the most economic time for collection of leaves. While the plants contain more alkaloid at maximum flowering time, due to growth, unless the size of the plants increased very materially, the alkaloidal strength lost offsets that in the added foliage.

Miss Stouffer reports on the fact that leaves of young hyoscyamus plants have assayed twice the normal alkaloidal content and concludes that the same would be true of belladonna.

The growth of the plants was slower in shaded woodland, but there was no material difference in growth of those half-shaded and those grown in the sun.

She states that there are many difficulties encountered in belladonna culture and the greatest source of trouble and destruction is the potato beetle. This she overcame by planting a row of potatoes around the belladonna bed; the beetles attacked the former and practically left the belladonna plants untouched.

The experience of the author is that belladonna grown in partially shaded beds is richer in alkaloids than that grown in the sun, and the leaves are richest in alkaloids just before the plants flower.

On motion of Mrs. Whelpley, duly seconded, the above papers and addresses were received and referred for publication.

REPORT OF THE COMMITTEE ON PRESIDENT'S ADDRESS.

This Committee recommends the adoption of the spirit of the President's recommendations, also that of the Secretary.

Further, we recommend that the committee to be appointed under the direction of the Executive Board shall be privileged to employ any suitable means to obtain results.

Respectfully submitted,

MRS. H. M. WHELPLEY,
MRS. M. M. GRAY,
CLARA HULSKAMP.

On motion the report was adopted. Mrs. Thatcher presented the

REPORT OF THE COMMITTEE ON RESOLUTIONS.

We, the Women's Section, now in session with the A. Ph. A., have certainly derived a great deal of pleasure out of the entertainments so generously planned for us by the ladies of Chicago. Each event has been deeply appreciated, and shall always be a source of very happy memories. Our heartiest thanks can but mildly express our gratitude.

To those who have been contributors, Miss Vittum, whose stirring address will not soon be forgotten; Mrs. Light and Mrs. Kennedy, whose music was an added pleasure; Drs. Dohme and Kebler, who made our afternoon session so attractive; we offer our deepest appreciation.

As it has pleased God in His infinite wisdom to bereave so many of our members,—Mrs. Charles Holzhauer, Mrs. A. B. Huested, Mrs. W. L. Dewoody, Mrs. Joseph P. Remington, and Mrs. George Timmons,—let us take this opportunity to condole with them by offering them a few words of comfort, knowing that "God works in a mysterious way His wonders to perform," though very often so unintelligible to us! May they find some balm to heal their very great sorrow.

We bow in reverence to Him and give thanks for our many blessings.

MRS. E. S. THATCHER,
ANNA G. BAGLEY,
MRS. IDA E. KEBLER.

On motion of Miss Bagley, seconded by Mrs. Kebler, the report was accepted.

Mrs. M. M. Gray, Chairman of Committee on Nominations, presented the names of the following for nominees of the Section:

President, Miss Zada M. Cooper.
First Vice-President, Mrs. W. L. Dewoody.
Second Vice-President, Mrs. F. J. Wulling.
Third Vice-President, Mrs. F. W. Meissner.
Secretary-Treasurer, Mrs. H. R. Kenaston.
Historian, Miss Bertha Ott.
Member of the Executive Committee, Miss Zada M. Cooper.
Chairman Membership and Press Committee, Mrs. John Culley.

Miss Cooper declined to serve another year and Miss Anna G. Bagley was nominated as President. The Secretary was directed by vote to cast an affirmative ballot for the nominees, which was done, and the President declared the officers elected.

The following officers being present, were installed by Mrs. L. F. Kebler.
President, Miss Anna G. Bagley, Columbus, Ohio.
Second Vice-President, Mrs. F. W. Meissner, La Porte, Indiana.
Secretary-Treasurer, Mrs. H. R. Kenaston, Bonesteel, South Dakota.
Member of Executive Committee, Miss Zada M. Cooper, Iowa City, Iowa.

By vote of the Section, the Executive Board was directed to elect the officers not present at the meeting and that the Secretary notify them of their election.

Upon motion, duly seconded and carried, the Secretary was directed to write letters to all pharmaceutical associations and conventions during the year.

The President submitted to the Secretary the following committees:

COMMITTEE ON MEMBERSHIP AND PRESS.

Chairman, Mrs. John Culley, 2579 Monroe Ave., Ogden, Utah.

District No. 1, Maine, New Hampshire, Vermont, Massachusetts and New York—Mrs. St. Claire Ransford Gay, 2787 Broadway, New York.

District No. 2, Connecticut, Rhode Island, Pennsylvania, New Jersey and Delaware—Mrs. C. H. LaWall, 39 S 10th St., Philadelphia, Pa.

District No. 3, Maryland, Virginia, W. Virginia, District of Columbia and North Carolina—Mrs. Lyman F. Kebler, Bureau of Chemistry, Washington, D. C.

District No. 4, S. Carolina, Tennessee, Georgia, Alabama and Florida—Mrs. E. A. Ruddiman, 1916 Adelicia St., Nashville, Tenn.

District No. 5, Mississippi, Louisiana, Arkansas, Texas and New Mexico—Mrs. Emily K. Hilton, Sorocco, N. Mexico.

District No. 6, Kentucky, Ohio, Indiana and Michigan—Miss Elizabeth Jenkins, 5th St. & Wayne Ave., Dayton, Ohio.

District No. 7, Illinois, Wisconsin, Iowa and Minnesota—Mrs. M. M. Gray, 4151 Gladys Ave., Chicago, Ill.

District No. 8, Missouri, Kansas, Nebraska, N. Dakota, S. Dakota and Oklahoma—Mrs. D. F. Jones, 106 Granite Block, Watertown, South Dakota.

District No. 9, Colorado, Wyoming, Montana, Idaho and Utah—Miss Marjorie Ford, Denver, Colorado.

District No. 10, Arizona, Nevada, California, Oregon and Washington—Mrs. Jennie Maguire White, 416 Hayes St., San Francisco, Cal.

OUTLOOK COMMITTEE.

Mrs. G. D. Timmons, Chairman, 458 Greenwich St., Valparaiso, Indiana.
Mrs. John G. Godding, 278 Dartmouth St., Boston, Mass.
Mrs. Geo. H. Schafer, 713 Front St., Ft. Madison, Iowa.
Miss Daisy Frick, Audubon, Iowa.
Miss Clara Hulskamp, 546 W. St. Catharine St., Louisville, Ky.
Mrs. H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.
Mrs. E. G. Fine, 814 Spruce St., Boulder, Colo.
Mrs. W. Bruce Philip, 1410 Fruitvale Ave., Fruitvale, Cal.
Mrs. E. S. Thatcher, 334 Ogden Ave., Milwaukee, Wis.

HOSPITAL COMMITTEE.

Miss Bertha Ott, Chairman, Bethesda Hospital, Cincinnati, Ohio.
Miss Mary R. Hamilton, Rochester General Hospital, Rochester, Pa.
Miss Norman C. Hawley, Butterworth Hospital, Grand Rapids, Mich.
Miss Leafy A. Sauer, South Side Hospital, Pittsburgh, Pa.

In behalf of the members of the Women's Section, it is my privilege to express our appreciation and gratitude for the many courtesies extended to make our stay in Chicago enjoyable and profitable. Especially do we acknowledge the trip to Municipal Pier; luncheon under the auspices of the Chicago Retail Druggists' Association; the ladies' card party in the Florentine Room of the Congress Hotel; the President's reception; luncheon served by courtesy of the Chicago Veteran Druggists' Association; the automobile tour of the city; visit to the Art Institute, Hull House and the Field Museum.

On motion the session adjourned.

MRS. H. R. KENASTON, *Secretary.*

ZADA M. COOPER, *President.*

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

CHICAGO.

The One Hundredth Meeting of the Chicago Branch of the American Pharmaceutical Association was a very successful one, held Friday evening, February twenty-first, at the LaSalle Hotel. Satisfied with a good dinner, cheered by a large attendance and enthused by the array of fine speakers, the audience took to "Pharmaceutical Research" wholeheartedly, and resolved that this most important phase of pharmacy should receive its proper support from now on.

Wilbur L. Scoville, of Detroit, the first speaker, presented the subject in his usual simple, practical style and brought most clearly before his audience the short-comings of pharmacy and the needs of pharmacy in the great world of research.

Dr. George D. Beal, of Urbana, a chemist reared under pharmaceutical influence, followed with an excellent paper on Pharmaceutical Research from a chemist's viewpoint. Dr. Beal called attention particularly to the movement initiated by Dr. Charles H. Herty, of the New York Section of the American Chemical Society, for the development of facilities for research on medicinal agents as applied to pharmaceutical chemistry. The inference is drawn that if the American Chemical Society does not come to the rescue, as the sole accredited body of scientists in the country capable of solving such problems, we will be unable to develop such facilities.

Dr. L. V. Redman, President of the Chicago Section of the American Chemical Society, discussed the subject in a very instructive and pleasing way. He recognized the great need for continued constructive research in pharmacy as in all other lines of scientific industry.

Dr. Bernard Fantus, of Chicago, spoke of the great lack of interest among retail druggists regarding all kinds of research, even the simplest, and deeply regretted that this is so. He strongly endorsed the work of the Research Committee of the A. Ph. A. and urged that this committee coöperate with the American Chemical Society in the proposed institute for research.

Dr. Edward Kremers, of Madison, Wis., in discussing the papers of the evening, said:

"What American pharmacy needs above all is a rebirth of the love for new truths in nature as it found expression in the life of Scheele. Not every pharmacist can hope to discover a new element or a new organic compound, but the vast field is ever open to him who has eyes to see while he is manipulating with his hands, no matter how humble the employment. This spirit is still alive in young men to-day as it was a hundred years or more ago. However, it requires cultivation, but we need not hope to witness a healthy growth in the atmosphere of over-commercialized pharmacy, which has been preached in season and out of season during the past generation, and the fruits of which doctrine we have just reaped during the war when our government refused to recognize pharmacy, as our officials knew it.

"This professional rejuvenescence of pharmacy does not necessarily require a large laboratory, it does not demand an endowment, but is mostly a question of attitude and proper atmosphere. Should the pharmaceutical lad of parts find his way into a commercialized pharmacy, this love for the search of new truths will soon be stifled in the wild chase for the almighty dollar. We cannot hope for a general rebirth of this kind until the practice of both pharmacy and medicine have become greatly restricted so that practitioners of both may be assured of a proper income, for the proper nurture of this spirit demands a relatively carefree mind.

"If on the one hand this general renascence

of pharmacy can come only with the future, we can take up at once the establishment of special research institutes for highly trained experts and specialists. This, however, demands money, more money, and yet more money. But if we wait until some one endows a million, we shall never get anywhere. Make a beginning, no matter how small, but make a beginning! If the commercialized druggist of to-day may not hope to experience the rebirth which we desire and which pharmacy needs above everything else, he can at least recognize the signs of the times. If he cannot contribute a Liberty bond, he can contribute a war savings stamp without even touching his bank account. To fail to do this is to court inevitable disgrace for our calling.

"The spirit of research is something typically individualistic, though the carrying out of many an important problem of research demands the coöperation of a number of individuals. This spirit is helped but little by committees and resolutions. Committees may have charge of the distribution of funds, if there be any worth distributing, but let us beware lest we substitute administration for research. Let us not waste our time resolving but let us spend the few hours that may be at our disposal in doing.

"What is more, 'do it now!' Let us who can contribute our mites, do so, in order that those who are abundantly able to do more may awaken to the situation and do their share. For a long time American pharmacy has been quite content to receive. This parasitic professional life must come to an end. We must give as well; moreover, we must give as freely as we receive. Then and only then will American pharmacy receive that universal recognition which is due so important a calling."

A letter was read from Dr. H. V. Arny, of New York:

NEW YORK, February 13, 1919.

DEAR PROFESSOR GATHERCOAL:

I am indeed sorry that I cannot be with the Chicago Branch at its meeting of the twenty-first and discuss with you the important subject of Pharmaceutical Research. I know, however, that the subject will be well handled by Messrs. Scoville and Beal and I therefore need only add a few words of comment on my part.

1. Too much research that should be done by pharmacists is being left by us for men outside of pharmacy to do.

2. That valuable side of pharmaceutical research, suggestions coming from retail pharmacists, arising out of their own personal experiences, is growing less, year by year, as comparison of the present literature and the literature twenty-five years ago will show.

3. Pharmacy is that much the poorer because the research spirit is so largely being supplanted by the commercial spirit.

4. If we permit this condition to continue, we will find all of this kind of work being performed by other agencies, such as the American Chemical Society and the Americal Medical Association.

5. A significant step in this direction is the proposition to establish an institute for research in the chemistry and pharmacology of drugs under the aegis of the American Chemical Society.

6. No greater service can be performed by the American Pharmaceutical Association than to engender the spirit of research, by its JOURNAL, its Year Book, and its newly organized Committee on Research.

7. No greater service can be performed by the Research Committee than to correlate the research efforts of American Pharmacy and to let the world know what American Pharmacy is doing along these lines.

8. No greater service can be performed by the local branches of the A. Ph. A. than to back up the parent organization in this work.

All of which is respectfully submitted by

Yours sincerely,

H. V. ARNY,

Chairman, Research Committee,

American Pharmaceutical Association.

Letters from George M. Beringer, H. M. Whelpley, Charles H. LaWall, A. B. Stevens, Henry Kraemer, J. H. Beal and J. A. Koch were received, expressing much interest in the subject of the meeting and regret at their inability to be present.

E. N. GATHERCOAL,

Secretary.

COLUMBUS.

The February meeting of the Columbus Branch, A. Ph. A., was held in the Chemistry Building, Ohio State University, on the evening of February 12, President Terry presiding.

Following the reading of the minutes of the previous meeting, and a discussion of ways and means of increasing the attendance, the program was taken up.

The State Prohibition Bill elicited much discussion, especially on the statement of the flavoring extract manufacturers that the extracts could not be successfully made without alcohol. Azor Thurston gave his views on the subject and stated that he had successfully made a number of non-alcoholic extracts of the same strength as those now in use and no change would be necessary in the present measurements of extracts for domestic use.

A letter from the A. Ph. A. Committee on Local Branches and a paper by President LaWall on "Shorter Working Hours for Pharmacists" were received and read. The Committee's plan is to send monthly, a four-minute discussion of some live topic to stimulate interest and discussion, and the plan should receive the support of all.

The Branch went on record favoring the introduction into our State Legislature of a Bill preventing aliens from becoming Registered or Assistant Registered Pharmacists. The Secretary was instructed to inform the Legislative Committee of the Ohio State Pharmaceutical Association of the action taken by the Branch.

Mr. Terry gave an interesting and instructive talk on some practical experiments which he had recently carried out. Samples of paregoric were shown, being prepared by the official process and extemporaneously with tincture of opium; a calcium compound of creosote representing approximately 85 percent of creosote and a comparatively stable compound; the generation of hydrogen electrolytically to eliminate the blank experiment on the zinc in arsenic determinations; the modification of milk to prevent unnatural curding.

Much interest was manifested in these subjects and he was requested to submit the review of his work in the form of papers to be presented to the JOURNAL of the American Pharmaceutical Association for publication.

PHARMACEUTICAL NOTES.*

BY ROBERT WOOD TERRY.

EXTEMPORANEOUSLY PREPARED PAREGORIC.

On several occasions the official formula for this preparation has been modified by using tincture of opium as the source of opium.

Tincture of Opium	40.0 mils
Benzoic Acid	4.0 grammes
Spirit of Camphor	40.0 mils
Spirit of Anise	40.0 mils
Glycerin	40.0 mils
Alcohol	392.0 mils
Distilled Water..To make..	1000.0 mils

Mix the alcohol, acid, spirits, glycerin, and then add four hundred and forty-eight mils of distilled water and mix thoroughly, then add the tincture of opium. After the mixture has cooled and the contraction ceased add sufficient distilled water to make the product measure one thousand mils. Filter if necessary.

In practice it has been found best to use 400 mils of alcohol and to reduce the quantity of spirit of anise slightly; this prevents a trace of cloudiness forming which will occur if the alcohol is not of pharmacopoeial strength.

The particular advantage of this procedure is, of course, in the rapidity of production. Another feature worthy of note is the positive assurance that the product contains the correct amount of morphine. In the official process for making paregoric there seems to be little room to argue that the opium would not be completely extracted, yet we have no positive assurance of this unless the finished product is assayed.

The product prepared by the use of tincture of opium will contain the correct amount of morphine, because it is mandatory that this tincture be assayed.

Tincture of opium and the camphorated tincture both contain 46 percent alcohol (absolute by volume); therefore no objection can be raised regarding a change of menstruum.[1]

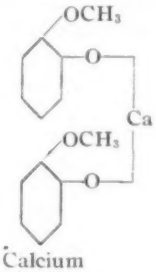
The few samples that have been prepared by this process are identical with those obtained by the official procedure as to color, taste and odor; occasionally, however, a sample is a trace light in color but not noticeable unless compared side by side with the official product.

CALCIUM CREOSOTATE.

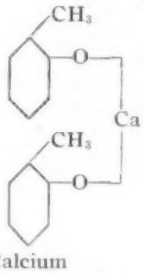
This susbstance has been prepared by the

* February meeting, Columbus Branch, A. Ph. A.

writer by several different methods. It appears to be a mixture of calcium cresolate and calcium guaiacolate in about the proportion of one part of the former to three of the latter; this, of course, depending upon the percentages of these constituents in the creosote used in its manufacture. It will contain not only calcium orthocresolate, but also the meta and para varieties. Theoretically it should contain 85.6 percent of creosote based on the above proportion of cresol and guaiacol. Analyses of several samples agree very closely with these figures.



Calcium guaiacolate.



Calcium orthocresolate.

Calcium creosotate is a white, dry, bulky powder having a suggestive odor of creosote and a sharp, somewhat aromatic taste. It is stable in dry air, but slowly decomposes in moist air and in the presence of carbon dioxide forming various colored products. It is slowly soluble in 0.3 percent hydrochloric acid, which liberates the creosote in globules.

The administration of this substance in capsules would appear to be an ideal method of administering creosote; especially since calcium is a synergist of creosote in all its indications.

ELECTROLYTIC ESTIMATION OF ARSENIC.

Considerable difficulty has been experienced by the writer with U. S. P. IX test for arsenic in that it is difficult to secure a sample of zinc that is sufficiently free from arsenic so as not to produce a stain on the mercuric bromide paper large enough to vitiate the results. This difficulty was overcome by modifying the U. S. P. IX method and generating the hydrogen electrolytically. A "side-arm U tube" is used, the lower portion of which contains c. p. concentrated sulphuric acid, which acts as a mechanical separator for the two arms of the tube. In the arm containing the negative electrode, or cathode, is added slowly the sample in a diluted sulphuric acid prepared according to the directions in the U. S. P. IX except that the stannous chloride solution is omitted. When stannous chloride is added, spongy tin is deposited on the cathode which soon obstructs the free passage of the current. While pouring the sample into the cathode arm of the U-tube, a similar strength of c. p. sulphuric acid is poured into the anode arm to balance the pressure of the sample on the concentrated acid. The electrodes consist of platinum wires attached to copper wires each being sealed in glass tubes in such a manner that only the platinum wire protrudes from the glass. These glass tubes are then passed through one-hole stoppers at the top of the arms of the tube so that all the gases evolved must pass through the side arms. The cathode should be long enough to dip just below the surface of the concentrated acid. Attached, in a vertical position, to the cathode side arm is a purifying train of glass wool, lead acetate paper, lead acetate glass wool and finally the mercuric bromide paper as described in the U. S. P. IX. The source of current is a twelve-cell battery with carbon and zinc electrodes and charged with a fluid consisting of sulphuric acid, sodium dichromate and mercuric sulphate.

No fear of oxidation of the arsenous compounds need be entertained by the formation of persulphuric acid as this substance is only formed at the anode.

No blank stain of arsenic has been produced by this apparatus and by the addition of 2.0 mils of the standard arsenic solution there is produced a distinct stain on the mercuric bromide paper which ceases to increase in intensity after about forty minutes. In each test the current is allowed to flow for one hour.

ADULTERATED COCONUT OIL.

A certain lot of coconut oil behaved in a somewhat peculiar manner upon cooling after being melted. As the oil cooled and while the bulk of it was still liquid, there appeared throughout the liquid numerous large bodies of solids. These were about three-quarters of an inch in diameter, flat on one side and rounded on the other, just like a half-sphere. In the center of the flat side there appeared to be a nucleus with numerous radiations extending to the edge; also a large number of concentric rings about the nucleus. All in all they resembled beef-stearin formations as crystallized from ether and examined microscopically.[2]

The oil analyzed as follows:

	Sp. G.	Iodine No.	Saponification value.
Sample Examined..	0.9352 @ $\frac{25}{15}$ C.	15.3	255.3
True Coconut Oil..	0.9114[3] @ $\frac{40}{25}$ C.	8–9.5	258.0

AN ARTIFICIAL STOMACH.

It became necessary in the course of some research work to study the action of the hydrochloric acid of the gastric juice upon milk as taken by an infant. It was necessary that the acid and milk be mixed in a manner identical with the mixing in the stomach. After some experimentation the following apparatus was constructed, which appears to meet all the requirements:

The "stomach" consisted of a three-hole Woulfe-bottle, the center hole containing a centigrade thermometer. Into one of the other two holes is passed a right-angled glass tube; while the other hole contains two right-angled glass tubes. Attached to two of these glass tubes are rubber tubes about a meter and a half in length which are attached to separatory funnels—one to hold the milk and the other the acid solution. The third right-angled glass tube is an air outlet. By a careful adjustment of the stop-cocks of the separatory funnels the flow of the liquids can be regulated as desired.

When in use, all of the apparatus except the funnels is placed in a water-bath heated to such a degree that the internal temperature of the flask is maintained at 38° C.—the average temperature of the stomach during digestion. The rubber tubes are coiled about the flask in the bath so that when the liquids drop into the "stomach" they will have reached the correct temperature. The flow of acid is started before that of the milk, as this occurs in nature. The peristaltic movements of the stomach are simulated in a manner by slowly rotating the flask in the bath.

The object of the experiments was to determine the effect, if any, upon the physical character of the paracasein curds by the various substances used in infant feeding. The results of these experiments may be published at some future date.

1. E. D. Davy, "The Preparation of Tinctures by the Dilution of Fluidextracts," JOURNAL A. PH. A., Feb., 1919.

2. Leach, "Food Inspection and Analysis 1914." Plate XL.

3. Azor Thurston, Dept. Pharm., O. S. U., Columbus, Ohio.

MARCH MEETING.

The March meeting of the Branch was called by President Terry in the Chemistry Building, Ohio State University, March 12.

A paper from the Committee on Local Branches on Compulsory Health Insurance, by E. G. Eberle, was received and discussed. A number of very good points are set forth in the paper and very good reasons advanced why druggists should use every effort to prevent the enactment of Compulsory Health Insurance laws.

The paper of the evening was read by Edward D. Davy on The Preparation of Phenylcinchoninic Acid, and he was asked to submit the paper to the JOURNAL for publication.

Mr. Thurston discussed briefly some of his recent work on santal wood oil and its adulterants.

EDWARD D. DAVY,
Secretary.

LUZERNE COUNTY.

The fourth regular meeting of the Luzerne County Branch of the A. Ph. A. was held in the Sterling Hotel Thursday evening, March 13th, with forty-four members present.

A paper prepared by Prof. Charles H. LaWall, on Shorter Working Hours, was read by Mr. Crandall.

Mr. Greenstein, of the Commercial Relations Committee, presented a plan, originated by Mr. Colley of his committee, and worked out by these two gentlemen, for concentrated buying of staples. The plan was approved by the body and referred back to the Committee for completion.

John Lowman presented an instructive paper on the Income and other taxes which affect pharmacists.

Louis Frank, of the Banquet Committee, announced that a banquet will be held Thursday, March 20th, at which time President Charles H. LaWall of the American Pharmaceutical Association will be present.

One candidate, Otto Wendel, was proposed for membership.

J. D. MORGAN,
Secretary.

NASHVILLE.

A special meeting of the Nashville Branch of the American Pharmaceutical Association and the Nashville Drug Club was held in the rooms of the Commercial Club, Thursday afternoon, March 6, for the purpose of discussing the new U. S. Revenue law. D. J.

Kuhn presided, and there were thirty druggists present.

Attorney W. B. Marr, the Counsel of the Nashville Drug Club, gave a very comprehensive outline of the law, showing its application to incomes, proprietary and patent medicines, toilet articles, tobaccos, soda fountain beverages and narcotics.

Charles S. Martin called the attention of those present to the necessity of immediately buying stamps for narcotics and placing them on all narcotics in stock. He also stated that the law required the registration of sales of all preparations containing narcotics that were exempted under the Harrison Law and that a payment of $1.00 for registration fee was required. He discussed the details of keeping records of all soda fountain sales and said that the Government expected all druggists to become good bookkeepers. S. C. Davis, Ira B. Clark, D. S. Sanders, D. J. Kuhn and others joined in the discussion.

Two methods for keeping track of soda fountain sales were suggested; one, by means of discs representing the values for which soda fountain drinks were sold, these to be put in a box and afterward properly listed. The other suggestion was to have a special cash register for these sales.

S. C. Davis, Ira B. Clark and D. J. Kuhn were named as a committee to study the law and suggest rules and regulations for its enforcement.

Ira B. Clark then spoke of the new Pharmacy bill which will be introduced in the Tennessee Legislature. He called attention to the prerequisite clause and the provision requiring that at least three members of the Examining Board be graduates in pharmacy. On motion the draft of the bill was unanimously approved.

W. R. White offered Resolutions of Respect on the death of the late Dr. J. O. Burge, which were adopted.

The Club re-elected the following officers: D. J. Kuhn, President; Ira B. Clark, 1st Vice-President; C. C. Young, 2nd Vice-President; D. S. Sanders, Treasurer; and W. R. White, Secretary.

WILLIAM R. WHITE,
Secretary.

RESOLUTIONS OF RESPECT.

WHEREAS, The Supreme Ruler of the universe, in His infinite wisdom, has seen fit to remove from the scenes of earth Dr. J. O. Burge, after permitting him to live a useful and lovable life for a little more than three score and ten years; and

WHEREAS, We the members of the Nashville Drug Club and the Nashville Branch of the American Pharmaceutical Association by many years of intimate association with him had found him to be a most kind and courteous gentleman, a thoroughly trained pharmacist, a splendid organizer, a fair and capable presiding officer, a clear and forceful thinker and interesting writer, a true friend and a most loyal and devoted advocate of professional pharmacy, for which he labored unceasingly and sacrificed greatly; therefore be it

Resolved, That we recognize that in his death American Pharmacy has suffered an irreparable loss, Nashville a worthy citizen, his family a loving father and husband, and our associations one of its staunchest, most loyal and efficient members; be it further

Resolved, That a copy of these resolutions be spread upon our minutes and a copy be sent to his sorrowing family, to whom we extend our heartfelt sympathy in this their hour of bereavement.

(Signed) WILLIAM R. WHITE,
D. S. SANDERS,
M. E. HUTTON.
Committee.

NEW ENGLAND.

A joint meeting of the New England Branch of the A. Ph. A. and the Boston association of Retail Druggists was held at the new building of the Massachusetts College of Pharmacy on Thursday evening, March 20, 1919, at which there was a large attendance.

The subject under discussion at the meeting related to the recent changes in the Harrison law; representatives of the United States internal Revenue Office in Boston made addresses and answered many questions asked by members present.

A business meeting and election of officers was held by the Branch, before the joint meeting, and the following officers were elected for the ensuing year: *President*, William H. Glover of Lawrence, Mass.; *Vice-President*, Daniel O. Wolff of Boston, Mass.; *Secretary-Treasurer*, Florin J. Amrhein, Massachusetts College of Pharmacy, Boston, Mass.; and *Council Representative*, Elie H. La Pierre, Cambridge, Mass.

THEODORE J. BRADLEY,
Acting Secretary.

NEW YORK.

The March, 1919, meeting of the New York Branch of the American Pharmaceutical Association was called to order in the lecture hall of the New York College of Pharmacy Building, on Monday evening, the 10th, at 8.15 P.M. In the absence of the President and Vice-President, Dr. Jacob Diner took the chair.

Sixty-one members were present.

Minutes of the preceding meeting were read and approved.

Member of the Council.—Prof. Hostmann brought in no report.

Membership Committee.—The following two applications were received for membership in the Parent Organization:

Edwin C. Steinach, 776 Melrose Ave., N. Y. City.

Chalmers J. Zufall, 641 Washington St., N. Y. City.

Fraternal Relations.—Dr. Lascoff had no report to bring in.

Auditing Committee.—Dr. Diner reported that whatever bills were on hand were paid.

Education and Legislation.—Mr. Kennedy brought in no report.

Communications.—Two "three-minute" letters of the Committee on Local Branches were read by the Secretary. Owing to the general interest of these letters the Secretary was ordered to send copies of same to the other Local Organizations in New York City. Drs. Hostmann, Diner, Diekman and Mr. Rosenberger took part in the discussion.

Resignations were accepted from E. E. Chilson and B. L. Maltbie.

The death of Dr. Joseph Kahn was reported and a committee consisting of Messrs. Mayo, Sher and Blumenkranz was appointed to draw up suitable resolutions.

Scientific Session.

Report of the Committee on Progress of Pharmacy.—Dr. Diekman read a very lengthy report including abstracts on,

New Reaction of Pyramidon.
Oil of Rose Product.
Kelp Experiments.
Photo Developer.
Sulphur Commercial Varieties.
Sol. of Al_2O_3 in NH_3.
Potassium in Nebraska.
Adult. of Neosalvarsan.
Storing of Sugar.
Bacterial Changes in Urine.

This was accepted with the thanks of the Association.

Dr. J. P. Snyder now gave a talk on the Standardization of Pharmaceuticals. A very interesting discussion followed and a vote of thanks was tendered the speaker.

Under regular procedure the meeting was declared adjourned.

HUGO H. SCHAEFER,
Secretary.

NORTHWESTERN.

The Winter Meeting of the Northwestern Branch of the American Pharmaceutical Association was held jointly with the scientific and practical section of the Minnesota State Pharmaceutical Association in the roof garden of the St. Paul Hotel, St. Paul, Minn., on the afternoon of February 25. Dean F. J. Wulling presided. The program of the meeting is printed on page 243 of the March issue of the JOURNAL A. PH. A.

CHARLES H. ROGERS, *Secretary.*

PHILADELPHIA.

The March meeting of the Philadelphia Branch of the American Pharmaceutical Association was held in The Philadelphia College of Pharmacy, Tuesday evening, March 25th, President McNeary occupying the chair.

The second of the series of "four-minute" papers was read by the secretary. It was written by Editor E. G. Eberle on the subject "Compulsory Health Insurance." The paper was discussed by Messrs. Cook, Boring, Stroup and Hessler. The points brought out were that the general public would derive no material benefit from such legislation but would rather be hindered by the additional taxes imposed and not receive as efficient medical attention because of the contract system of remuneration for physicians and pharmacists; also, the physician and pharmacist would be materially affected to his detriment by legislation of this type.

One new member was elected (Earl K. Eberly, of 1700 Mt. Vernon St.). No committee reports were received excepting that of the Nomination Committee, which was as follows:

TO THE OFFICERS AND MEMBERS OF THE PHILADELPHIA BRANCH OF THE AMERICAN PHARMACEUTICAL ASSOCIATION:

Your Nominating Committee appointed at the February meeting have met and beg leave

to offer the following list of nominees for the ensuing year:

For *President*, Ivor Griffith.

For *First Vice-President*, J. W. Ehman.

For *Second Vice-President*, J. K. Thum.

For *Secretary and Treasurer*, Elmer H. Hessler.

Committee on Fraternal Relations, J. R. Minehart, F. E. Stewart, O. W. Osterlund.

Committee on Practical Pharmacy, E. Fullerton Cook, R. C. White, W. W. McNeary.

Committee on Membership, J. C. Peacock, R. Hendrickson, W. L. Cliffe.

We recommend for the ensuing year a Committee on Publicity be appointed, consisting of the President, the Secretary-Treasurer and one other member. This Committee shall prepare notices for all Philadelphia newspapers in advance of the meeting wherever possible and shall attend to the matter of interviewing reporters and other publicity matters of value to the profession and interest to the public.

(Signed) CHAS. H. LAWALL,
E. G. EBERLE,
R. HENDRICKSON.

The entire ticket was unanimously elected and on a motion made by E. G. Eberle, Prof. F. P. Stroup was elected the other member of the Publicity Committee. The suggestion was made that this Committee immediately take steps to challenge distorted and false reports concerning pharmacists which appeared in the daily press. After the installation of the new officers the meeting was transferred to the Special Chemistry Lecture Room where we were given a most interesting lecture and demonstration on Physiological Assaying by Dr. Paul S. Pittenger of the Mulford Laboratories. Dr. Pittenger clearly defined the various terms and phases of the subject and then carried out practical demonstrations on guinea pigs and frogs for Digitalis and on a dog for the blood pressure test for suprarenal extract.

The subject was afterward discussed by Dr. W. A. Pearson and Prof. J. W. Sturmer. Dr. Pittenger was tendered a rising vote of thanks. A light lunch was served, after which the meeting adjourned.

This was the most successful meeting of the year, more than sixty being present. The increasing number of ladies present was noticeable and marks the trend of affairs in scientific matters where a few years ago men alone were concerned.

ELMER H. HESSLER,
Secretary.

COUNCIL BUSINESS

A. PH A. COUNCIL LETTER NO. 13.

PHILADELPHIA, PA., March 14, 1919.

To the Members of the Council:

John Uri Lloyd writes to the Secretary of the Council as follows:

"On my return from California I find your letter concerning the storage of the Proceedings, Year Books, etc., and immediately reply. It disturbed me mightily when the crush of the Influenza necessitated the ware-room space of the publications, but within a very few days we were forced by the increase in the stock of material necessary to care for our business, to utilize every available nook and corner of our ware-rooms and laboratory. Professor Day very kindly united with us, and it was decided that it would be cheaper for the Association to secure a storage place temporarily in Cincinnati, than for Lloyd Brothers to secure a storage place for their crude drugs, and be continually hauling them backwards and forwards to the mill and the laboratory. In this I take it you will also agree.

"Most reluctantly then did we find a disturbance to the very pleasant arrangements that had been made in the past, but feel assured that the Proceedings are in hands where they will be even more available than with us, and in my opinion where they should be, at the close command of the Secretary.

"Let me hope that you are well, and let me thank you for your kindly letter expressing Professor LaWall's compliments, and let me hope that you will express to the Council our gratification at the kindly manner in which they united with us in the emergency that no one could have foreseen.

"The personal time necessary to the care and invoicing of these publications wasmost gladly contributed by me. No account was kept of expenses, which were as cheerfully donated."

The Committee on Program, consisting of the General Secretary, the Local Secretary and the Secretary of the Council, recommend that the time for holding the next annual meeting of the American Pharmaceutical Association be made the week beginning August 25, 1919. The Hotel Pennsylvania will be the headquarters.

Motion No. 17 (Time of Holding 57th Annual Meeting of the American Pharmaceutical Association). Moved by Hugo H. Schaefer, seconded by J. W. England, that the 57th annual meeting of the American Pharmaceutical Association be held during the week beginning August 25, 1919.

The Committee on Program present the following tentative program for the 57th annual meeting for the week beginning August 25, 1919:

TENTATIVE PROGRAM FOR 57TH ANNUAL MEETING.

Monday.

9.30 A.M. National Association Boards of Pharmacy.
2.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.
8.00 P.M. National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.

Tuesday.

9.00 A.M. Council Meeting.
National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties.
3.00 P.M. First General Session of Association.
Committee on Nominations.
7.00 P.M. Joint Session of National Association Boards of Pharmacy.
American Conference of Pharmaceutical Faculties and Section on Education and Legislation.

Wednesday.

9.30 A.M. Section on Education and Legislation, second session.
Section on Practical Pharmacy and Dispensing, first session.
10.30 A.M. House of Delegates, first session.
Afternoon devoted to Entertainment.
7.30 P.M. Council meeting, second session.
9.30 P.M. President's Reception.

Thursday.

9.30 A.M. Commercial Section, first session.
Historical Section, first session.
Scientific Section, first session.
10.30 A.M. Women's Section, first session.
12.00 Noon Alumni Luncheon.
1.30 P.M. House of Delegates, second session.
2.30 P.M. Scientific Section, second session.
Section on Practical Pharmacy and Dispensing, second session.
4.30 P.M. Council Meeting, third session.
8.00 P.M. Second General Session of Association.

Friday.

9.00 A.M. All day Boat Ride.
10.00 A.M. Scientific Section, third session (session on boat).
Commercial Section, second session (session on boat).
11.00 A.M. Women's Section, second session (session on boat).
3.00 P.M. Historical Section. Address by Dr. Henry M. Whelpley.
7.00 P.M. Council Meeting, fourth session.
8.30 P.M. Banquet.

Saturday.

9.00 A.M. Council Meeting, fifth session.
10.00 A.M. Final General Session of Association.
1.30 P.M. Luncheon.
3.00 P.M. Seeing downtown New York.

Comments and suggestions invited.

(*To be continued*).

CORRESPONDENCE

PHARMACISTS IN THE WAR.

Although pharmacists are an educated class and a large proportion of them are the equal in education, training and accomplishments of members of other educated groups and although by their training they are able to give a highly specialized and responsible medical service, their service as a profession organized into a corps was not employed as such in the Army, contrary to the recognized group or corps employment of physicians, dentists, veterinarians and others.

They were, nevertheless, unselfish and patriotic enough to give themselves unreservedly to their country in the time of its peril. As loyal American citizens they gave their service and many their lives as patriots. They were and are patriots first and this is as it should be. When the complete history of the great war will have been written, it will appear more clearly than even now that pharmacists in the army and in the navy gave not only unselfish and valuable, but heroic service.

In a most interesting and informative book just published by the house of Doubleday, Page & Company, entitled "With the Help of God and a Few Marines," and written by Brigadier General A. W. Catlin, U. S. M. C. (who commanded the Sixth Regiment of the Marines at Chateau Thierry), with the collaboration of Walter A. Dyer, and which gives the story of the great fight at Chateau Thierry when the U. S. Marines with American Infantry brought about the turning point in the war, prominent mention is made of the citations for valour in action in the battle of Belleau Wood of a number of pharmacists in the marine service. For the information of pharmacists at large, I quote the following from the book mentioned:

"CITED FOR VALOUR IN ACTION

HEADQUARTERS SECOND DIVISION,
AMERICAN EXPEDITIONARY FORCES,
FRANCE, July 5, 1918.

GENERAL ORDERS
No. 40.

1. The names of and the deeds performed by the following named officers and enlisted men of this division are published as being well worthy of emulation and praise:

(Page 356.) Pharmacist Mate Charles B. Roberts, U. S. N., 8th Company, Marines; showed extraordinary heroism under heavy machine gun fire, volunteering to cross open field to bring in wounded who were calling for help, on the night of June 7th, 1918.

(Page 366.) Hospital Apprentice Glenon, U. S. N., 18th Company, 5th Marines, displayed greatest zeal, bravery and efficiency in attending the wounded during the enemy attack of June 7–8–9, and when he worked continuously for two nights and days under heavy shellfire.

(Page 378.) Pharmacist Mate, 3rd Class, Oscar S. Goodwin, U. S. N., 6th Marines, at the imminent risk of his life, under shell and machine gun fire, was instrumental in removing the Regimental Commander when he was struck down by a sniper's bullet early in the operations which resulted in the capture and occupation of our objective on the 6th of June, 1918. This man helped to remove the Regimental Commander from further danger regardless of the fire sweeping the point where he fell, meeting a sudden crisis promptly and completely.

(Page 383.) Hospital Apprentice, 1st Class, John E. Justice, U. S. N., Hospital Corps, 6th Marines:

Pharmacist Mate, 3rd Class, John H. Balch, U. S. N., Hospital Corps, 6th Marines:

The two men above named were conspicuous for their coolness and the value of their work under shellfire, evacuating wounded men at the risk of their lives, during our attack upon the enemy on the night of the 6th of June.

(Page 398.) Pharmacist Mate, 2nd Class, Clifford Whistler, Hospital Corps, U. S. N., attached to Company E, 6th Marines, repeatedly gave aid to the wounded while under artillery fire. This between the 2nd and 9th of June, 1918.

(Page 400.) Pharmacist Mate, 1st Class, Percy V. Templeton, U. S. N., 6th Marines, during extremely heavy shellfire, this man carried wounded for several hours, loading them into ambulances, assuring their safety at the risk of death to himself. This on the 10th of June, 1918.

(Page 400.) Pharmacist Mate, 1st Class, Emmet C. Smith, U. S. N., 6th Marines. In the course of operations which resulted in the capture of a town from the enemy, this man dressed and evacuated wounded from a wheat field swept by heavy artillery and machine gun barrage. At a time when the losses threatened to prevent the success of the operation, the heroic conduct of this man steadied the line and spurred the attacking platoons on through the barrage fire. This on the 8th of June, 1918.

(Page 401.) Chief Pharmacist Mate, George G. Strott, U. S. N., 6th Marines, rendered valuable services as chief aid at the Regimental Aid Station in the care and evacuating of many wounded from the 1st to the 10th of June. Although at times under heavy bombardment he

performed his labours without faltering, and by rare fidelity to duty preserved accurate record of all officers and men of the various organizations which passed through the aid station. He showed himself a courageous and faithful man.

(Page 407.) Pharmacist Mate, 3rd Class, John Q. Williams, Hospital Corps, U. S. N., 3rd Battalion, 6th Marines, rendered conspicuous service in attending the wounded on the field under heavy machine gun fire. This on the 6th of June, 1918.

(Page 407.) Hospital Apprentice, 1st Class, William B. Evans, Hospital Corps, U. S. N., Company M, 6th Marines, showed rare devotion to duty and courage in caring for the wounded under fire in the capture of a town by our forces. This on the 6th of June, 1918.

(Page 421.) Hospital Apprentice, 1st Class, Hershel I. Converse, U. S. N., 6th Machine Gun Battalion:

Hospital Apprentice, 1st Class, Lloyd H. Fenno, U. S. N., 6th Machine Gun Battalion:

Hospital Apprentice, 1st Class, Charles W. Bateman, U. S. N., 6th Machine Gun Battalion:

Pharmacist Mate, 3rd Class, William C. Graham, U. S N., 6th Machine Gun Battalion:

(Page 422.) Pharmacist Mate, 3rd Class, Milton C. Olson, U. S. N., 6th Machine Gun Battalion:

The five men above named showed commendable bravery and diligence under fire, particularly Private Converse, who completed the first aid treatment of a wounded man after being wounded himself."

It may be pardoned if the citations of the following are included in this quotation:

"1st Lieutenant Albert P. Baston, 17th Company, 5th Marines:" (A Minneapolis and University of Minnesota man of athletic fame.—F. J. W.)

"Although shot and wounded in both legs by machine gun fire, after leading his platoon through the woods on June 6th, he refused to go to the rear until after personally seeing that every man in his platoon was under cover and in good firing position.

"2nd Lieutenant Bernhardt Gissell, U. S. R., 17th Company, 5th Marines:" (My brother-in-law and one of Mrs. Wulling's three brothers in service.)

"He has shown high qualities of leadership and personal bravery in command of his platoon and led them under heavy shellfire in repulsing a counter-attack of the enemy, June 6th."

At the conclusion of the citations occurs the following on page 425 of the book mentioned:

"By Command of Major General Bundy:

Preston Brown,
Colonel, General Staff,
Chief of Staff.

OFFICIAL:

WILLIAM W. BESSELL,
Adjutant General,
Adjutant.

The above is an extract copy of G. O. 40, Second Division, A. E. F., in so far as it refers to Marine officers and Marines, and is reprinted by authority of Headquarters, Marine Corps."

The above citations refer to action in the battle of Belleau Woods, Chateau Thierry.

It may not be amiss to mention here, that although not cited, another pharmacist, Francis A. Tuttle, H. A. 1st Class, 6th Regiment, Marine Corps, of Minneapolis, and a sophomore pharmacy student in the four-year course of the College of Pharmacy, University of Minnesota, was engaged in the battle of Belleau Wood and was wounded in the forehead during action and gassed, necessitating his confinement for five months in Base Hospital No. 30, at Royat, France. Mr. Tuttle has wholly recovered his health and expects to be discharged soon and to resume his college work.

The following graduates of the College of Pharmacy of the University of Minnesota have made the supreme sacrifice: namely, Milton G. Giese, '14, Menomonie, Wis.; Lloyd H. Scott, '16, Eden Valley, Minn.; Hugh M. Watson, '13, St. Charles, Minn.; while I am not advised, doubtless there are others whose names should be included.

It is sincerely hoped that anyone who finds references similar to the above, relating to the heroic services of pharmacists in the army, will communicate them to the profession through the pharmaceutical press.

FREDERICK J. WULLING.

EDITORIAL NOTES

Editor: E. G. EBERLE, Bourse Building, Philadelphia, Pa.
Committee on Publication: J. W. ENGLAND, *Chairman;* G. M. BERINGER, CASWELL A. MAYO, H. B. MASON, E. L. NEWCOMB, and the Editor-in-Chief of the JOURNAL, General Secretary, Treasurer and Reporter on Progress of Pharmacy, *ex-officio.*

THE POSSIBILITIES AND OPPORTUNITIES OF AMERICAN PHARMACEUTICAL ASSOCIATION BRANCHES.

The opportunities of an association are seldom, if ever, fully comprehended by individuals. Organizations are formed, and not infrequently before they have passed the first year of existence the interest of the members lags, for some reason or other. This is generally due to the fact that the energy and enthusiasm are centered on the first few meetings instead of mapping out a program of action for a longer period.

There is lack of understanding of many laws that apply to the drug business. Discussion among the members is helpful, and there is the further opportunity of having a lawyer or official explain obscure points before an interested organization.

It is unfortunate that legislators seldom seek information of those they legislate for; they have their hobbies and their views of reforms and necessary legislation. Druggists do not often come into personal contact with legislators, unless they are members of legislative committees of their associations, and then they are usually included among lobbyists. The monthly meetings offer the opportunity of having legislators, or, better, prospective legislators, address the association and exchange viewpoints. By proper arrangement it is possible to have every member of the State Legislature meet druggists in their respective districts, whereby their attitude may be changed toward druggists and their business.

The thought of the foregoing paragraph is applicable to the relation with medical associations. Not infrequently the regard of competitors for one another is decidedly changed by acquaintance. "If I knew you and you knew me" has frequently been quoted. And knowing one another has often improved business relations and conditions. Not long ago a branch of the American Pharmaceutical Association was organized which brought about an agreement for shorter business hours, and this alone was considered worth the undertaking.

The revisions of the Pharmacopoeia and National Formulary now occupy the attention of the revisers, and will for a number of years to come. All pharmacists are interested in these standards, and their assistance is sought for the revisions. This offers subjects for each meeting, and it is this work aside from the duty of sharing in that of the American Pharmaceutical Association, which has prompted the superscription of this note. Pharmacists of the smaller cities may contend that branches are for the larger cities, but this is a misapprehension; it will be found that the members of the smaller branches derive as much or more benefit than those of the larger ones. There were a few members of the American Pharmaceutical Association in Wilkes-Barre before the Luzerne County Branch was organized; now this city has 100 percent membership. There are many other cities of like population that can do as well.

While local associations can accomplish much of that which has been suggested, the possibilities and opportunities are enlarged by national affiliation. The American Pharmaceutical Association seeks to aid the druggists, and in no sense confines its work solely to scientific subjects, as evidenced by its Scientific Section, and the Sections on Practical Pharmacy and Dispensing, Commercial Interests, Women's Section, Historical Pharmacy, Education and Legislation. The message is to enlist your interest in the organization of Local Branches of the American Pharmaceutical Association.

INCONSISTENCIES IN LEGISLATION AND PROMULGATION OF REGULATIONS.

The tendency toward paternalism, and legislation that is intended to enforce right living, is becoming more pronounced. Whether this will make better citizens remains a question for time to answer. The youth have been neglected in so far as impressing upon them their possibilities, limitations and tendencies, their deficiencies, weaknesses, and the results of transgression are concerned. Many pitfalls would have been avoided if these

matters had been understood by them in earlier years. Parents consider that they have done their duty without giving their children an understanding of why they should be moral, temperate, frugal, etc. True, they speak of these subjects but they fail to impress them sufficiently, and the superficial information is little more than an incentive to investigate, and then they pay for their experience, which experience, as H. Addington Bruce says, has again and again shown that a man may be an intellectual giant, yet fail as a member of society because of personal trends and desires which he has not been taught to control and overcome—which he has not even been taught to recognize as present in him.

Thus an uncontrolled trend to self-centeredness has made many a man of highly trained intellect a menace to his fellow beings. It has caused nervous wreckage in many another. It has led still other men through the gateway of insanity.

Moral cowardice, unchecked and unrecognized, is another prolific source of human failure and misery from which the intellectual are not exempt. The duty of parents, schools and colleges is to help the young to escape pitfalls like these no less than to attain mental vigor.

These remarks may seem distant from the subject but they are not; present laws are largely for the purpose of correcting the defects of training and attempts to make temptations impossible, and this can not be done; the thing is, the building of character. In this generation the children and students have too generally controlled the parents and directed the teachers.

With reference to the other subject, we cite recent attempts at rulings, decisions and statements by authorities. It has been under consideration by the Internal Revenue Department to tax the entire quantity of a preparation containing narcotics in exempted amount. Since the foregoing was written it has been decided that the exemptions of Section 6 of the Harrison law hold, but preparations containing narcotics in excess of such exemptions are taxed on the basis of 1 cent per ounce or fraction thereof. The stamp tax became effective February 25th and narcotic preparations of latter class must be stamped, unless in stock prior to that date. The latter must have a label affixed with the words, "In stock, inventory February 25th.

Relative to legislation on alcoholic preparations a comprehensive article would require many pages, but the purpose of this writing is to point out the arbitrariness of rulings. There is no definition of an intoxicating beverage in the war-time prohibition law. The Internal Revenue Bureau has assumed the power to make a definition of its own and it has ruled that a beverage containing more than one-half per cent of alcohol is intoxicating. The question at issue is not whether a certain content makes a beverage intoxicating, but whether a bureau has the right to fix an arbitrary limit in the absence of any definite authority of law. In the Customs Department provision is made for an appeal from rulings but in some other departments officials set up their own judgment on the meaning of the law and have supplied out of their own consciousness all omissions made by Congress.

In Nashville, Judge J. D. B. DeBow has decided, and he is sustained by the Tennessee Supreme Court, that denatured alcohol can not be sold, unless "it is made so poisonous that to drink it means death." All, because some are able to withstand the immediate destructive effects of alcohol, denatured by the addition of methyl alcohol.

THE EFFECT OF THE DISCONTINUANCE OF THE SALE OF ALCOHOLIC BEVERAGES ON ILLEGAL DRUG TRAFFIC.

Louis Zeh, Secretary of the California State Board of Pharmacy, recently appeared before the sub-committee on legal service of the main legislative committee on efficiency and economy, and advised that the Board would need additional legal service when prohibition becomes effective. He showed that in the dry districts of California there is a steady increase in the number of prosecutions for the sale of narcotics, while the reverse is true in the districts where the licensed saloons are maintained. He produced figures to show that during the past nine years prosecutions of this kind had steadily decreased at San Francisco, notwithstanding an enormous increase in population; whereas in Los Angeles there has been a steady increase since saloons were eliminated there.—*Drug and Chemical Markets.*

THE QUESTION OF MILITARY RANK.

Pharmacists have been contending for rank for pharmacists in the Army and Navy. The need of this to assure best service has often

been denied. It is evident, however, to the unbiased that there can not be the most serviceable coöperation between medical men and pharmacists unless there is a degree of rank given to the latter, and the soldier is entitled to the best service; less is an injustice.

Prof. W. O. Stevens, U. S. Naval Academy, writing in a recent issue of the *Atlantic Monthly*, speaks of a British officer who was dismissed from service because of the "horrible crime" of having a sergeant dine with him. We quote in part: "The poor fellow (the officer) had grown so desperately lonely in that forsaken spot, that he summoned his sergeant and, after pledging the man to secrecy, asked him to dinner. Some time after, while in liquor, the sergeant boasted of his distinction. The matter was investigated, the subaltern was proved guilty of the horrible crime, and dismissed from the service. When I heard the story, I could not understand what there was so awful about the young officer's conduct, but was ashamed to betray the fact by asking questions. In later years, coming in contact with the military, I was given to understand that, while democracy may be all very well in politics, it has no place in the army or navy."

DRUG RESEARCH PLAN DISCUSSED IN ENGLAND.

The Chemist and Druggist, in discussing plans for drug research, states that there are distinct advantages attached to an independent institution which can work at drug problems apart from financial interests, and it is here that the pharmaceutical institute would score. The field is, however, broad enough for both classes of research laboratories, and there are ample opportunities in the work to satisfy both the scientist and the investor. The work need not be confined, the article further states, to synthetic drugs; there is a vast field of study in plant substances upon which comparatively little modern work has been done. Many plants employed in medicine have not yielded up the secrets of their curative action. The study of drugs is a most promising one, and if it became the function of a research laboratory connected with pharmacy it would increase the reputation of pharmacy as a science.

ACACIA ADDED TO SALT SOLUTION TO GIVE GREATER VISCOSITY.

Professor Bayliss, the English physiologist, suggested the addition of acacia to salt solutions for injection in cases of shell-shock. Experience proved that the salt solution should have greater viscosity, and after considerable experimentation the selection was made of acacia, and has proven highly satisfactory. The *British Medical Journal* is convinced that many shell-shock patients of the war were saved who, without the injection of salt solution, with acacia, would certainly have died of the original injury or of the necessary subsequent operation, and comments "that medicine owes physiology a debt great beyond estimation. The debt mounts up, and this use of gum arabic is not, we think, the least of the items composing it."

OBITUARY.

JOHN FRANKLIN PATTON.

John F. Patton, president of the American Pharmaceutical Association, 1900, died March 17, 1919, after an illness of only a few hours.

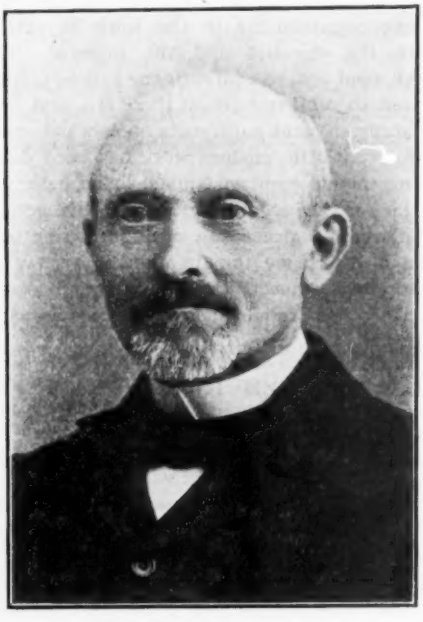
The deceased was born in Lower Windsor Township, York County, Penna., December 15, 1839, the son of Ebenezer and Rebecca (Smith) Patton.

John F. Patton received his early education in the schools of York County. In 1853 he located in York and three years later entered the drug store of Dr. Jacob Hay, Sr. In 1859 he engaged with Thomsen and Block, wholesale druggists, in Baltimore, and remained with them until 1866.

In 1869 he engaged in the drug business in York, Pa., on his own account, in a building on the site of his present store. In 1873 a flood destroyed the two drug stores owned by him. At this time Mr. Patton had already started the erection of a new building, still occupied by the City Drug Store, of which he was proprietor, and here he continued in business until the day of his death.

Mr. Patton was a frequent attendant at the annual conventions of the American Pharmaceutical Association. He endeared himself to all who knew him by his genial disposition and good fellowship, and was familiarly known to his friends as "Uncle John." He served as president of the Pennsylvania Pharmaceutical Association in 1891, and at various times held important offices in both this organization and the American Pharma-

ceutical Association, serving in the Council of the latter from 1902 to 1905.



JOHN F. PATTON

Mr. Patton never married. He is survived by two sisters, Mrs. Charles B. Allen, of York, Pa., and Mrs. Eliza Arnold, of Delta, Pa. He was a member of the Lutheran church. The interment was made in Fairview Cemetery at Wrightsville.

His was a ripe and mellow old age. He had not become decrepit or superannuated. Until his death he was quick and alert in action, of unimpaired intellect, hale, hearty and cheerful.

JOSEPH KAHN.

Joseph Kahn, Instructor in Chemistry at the Brooklyn College of Pharmacy for the past fifteen years, died March 3rd in the library of the college. Professor Kahn had been suffering from heart trouble for several years and his death, though sudden, was not wholly unexpected.

He was 47 years of age, and came to Brooklyn as a boy. After completing his common school education he entered the Brooklyn College of Pharmacy, from which he graduated in 18[illegible]; thereafter he took a post-graduate course in chemistry, receiving the degree of Doctor of Pharmacy. He was elected instructor in chemistry in his Alma Mater, and later Professor of Pharmaceutical Chemistry.

Professor Kahn was held in high esteem by all with whom he came in contact, and was a frequent contributor to pharmaceutical literature. He was a member of the New York Pharmaceutical Association, and joined the American Pharmaceutical Association in 1915. He also held membership in a number of other chemical and pharmaceutical bodies.

He specialized in analytical chemistry and research work and his annual addresses at the meetings of the New York State Pharmaceutical Association were always most interesting and instructive and looked forward to by the members as a decided treat.

JOSEPH KAHN

Professor Kahn never married. He is survived by his parents and a brother, who reside in Russia.

SOCIETIES AND COLLEGES.

SECTION ON EDUCATION AND LEGISLATION, AMERICAN PHARMACEUTICAL ASSOCIATION.

Chairman Wortley F. Rudd, of the Section on Education and Legislation, A. Ph. A., is actively at work with the other officers of the Section on the preparation of the program for the New York meeting. It is contemplated to devote one session of the Section to U. S. P. revision considerations, probably as

a symposium. It is hoped that these discussions will be helpful in planning for the work of the Pharmacopoeial Convention. This by no means will interfere with other subjects and contributors are requested to send in their papers as early as possible.

The other Section officers are likewise at work and contributions are solicited by them. The papers should be typewritten, double space between lines. An abstract should accompany all papers, especially those requiring more than ten minutes for reading. The names of the Section officers, with addresses, will be found on page 69 of the January issue of the JOURNAL A. PH. A. Papers should be in the hands of the chairman not later than July 15; when this is impossible, the title of the contribution and, if possible, an abstract of the paper, should be sent in. This will insure their inclusion in the program of the Section.

AMERICAN DRUG MANUFACTURERS' MEETING.

The annual meeting of the American Drug Manufacturers' Association was held at the Waldorf-Astoria, New York City, March 24–27. Monday was given over to the Committee on Standards; Tuesday to the Biological Section and an address in the afternoon by Chairman Charles H. LaWall of the U. S. P. Revision Committee. Wednesday and Thursday were devoted to business sessions, including a special trade-mark address on Wednesday by Henry Thompson, of Boston. The entertainments included luncheons; an address, Tuesday evening, by Signaler Tom Skeyhill, the soldier poet; a banquet on Thursday evening, on which occasion Hon. James W. Gerard, Hon. Job Hedges and Police Commissioner Richard Enright were the speakers.

The association strongly protested and passed a resolution against the persistent efforts being made to eliminate patent products and to effect the compulsory workings or the compulsory licensing of patents. In brief, the body reaffirmed its opposition against all patent, copyright or trade-mark legislation discriminating against inventors and discoverers in the fields of medicine, pharmacy and chemistry.

The officers elected for the ensuing year are: *President*, R. C. Stofer, Norwich, N. Y.; *Vice Presidents*, Dr. Frederick B. Kilmer, New Brunswick, N. J.; William Ohliger, Detroit, and Burton T. Bush, New York; *Treasurer*, Frank Black, New York; *Secretary*, W. J. Woodruff, Detroit. W. A. Sailer, Baltimore, and James E. Bartlett, Detroit, were elected members of the Executive Committee, and Charles M. Woodruff, Detroit, chairman of the Legislative Committee.

NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION CHANGES DATE OF ANNUAL CONVENTION.

The forty-fifth annual convention of the National Wholesale Druggists' Association will be held at New Orleans, beginning the week of November 3. The meeting will cover a period of four days, ending November 7.

This date is two weeks earlier than that originally announced, the change being necessitated by inability to secure adequate hotel accommodations for the time previously selected.

IOWA STATE PHARMACEUTICAL ASSOCIATION MEETING.

The mid-winter meeting of the Iowa Pharmaceutical Association, held at Des Moines, February 18–19, proved to be one of the most interesting as well as one of the best attended conventions in the history of the Association.

The president's message was in keeping with the record that President Watts established at the Ft. Dodge convention, and contained valuable recommendations for the future guidance of the association. Practically every one of the suggestions made in the address was adopted by the Advisory Board and later on by the convention.

George Judisch, of Ames, gave a talk on the future of pharmacy and also explained the work of the U. S. Pharmacopoeial Convention to be held in 1920.

Prof. Kuever gave a very interesting account of his experiences in the service and emphasized the necessity for all pharmacists to get behind the movement to secure proper recognition for pharmacy in the army.

The following officers were elected for the ensuing year: *President*, A. C. Phillip, Manchester; *First Vice-President*, H. F. Jones, Clarinda; *Second Vice-President*, George Judisch, Ames; *Third Vice-President*, M. B. Herrold, Boone; *Treasurer*, J. M. Lindly, Winfield; *Secretary*, A. Falkenhainer, Algona. T. M. Watts, of Holstein, was elected a member of the executive committee for three years.

The next meeting place of the convention will be in Cedar Rapids some time during the month of June in 1920.

THE PHARMACIST AND THE LAW.

MERCHANTS' ASSOCIATION OF NEW YORK OPPOSES REGULATION CALLING FOR ADDITIONAL RECORDS IN THE SALE OF ALCOHOL-CONTAINING MEDICINES.

In accordance with the action taken upon the report made by its Committee on Commercial Law, the New York Merchants' Association has written to the public health committees of the Legislature opposing a bill compelling additional records to be kept by manufacturers of medical preparations, druggists and physicians.

The letter which as sent to Albany by the association sets forth the opposition to this bill is as follows:

SALE AND DISTRIBUTION OF PATENT MEDICINES.

Sen. Int. No. 372, Pr. 383
(Mr. Dowling)
Assem. Int. No. 552, Pr. 574
(E. A. Smith)

"The purpose of this bill is so to amend the public health law as to make subject to the provisions of the narcotic drugs act of 1918 all proprietary medicines containing alcohol in excess of one-half of one percent.

"The provisions of the narcotic drugs act are intentionally and properly very drastic in order that the unwarranted sale of harmful drugs shall be made very difficult. It cannot reasonably be contended that proprietary medicines containing a small percentage of alcohol are equally harmful to the community with such drugs as opium and its derivatives, cocaine, etc., and it is therefore unreasonable and unnecessary that such proprietary medicines be subjected to conditions which, in many instances, will exclude them from sale and thereby prevent their manufacture.

"While undoubtedly proprietary medicines which contain a large and harmful percentage of alcohol should be subjected to proper restriction, it is absurd to contend that the maximum alcohol content should be made so low as to exclude from use a wide range of very useful household remedies which cannot be compounded without a much greater content of alcohol than that limited by this proposed law.

"Under the terms of this proposed act the shelf sale of such medicines would be made impracticable and they could only be used under a physician's prescription with the attendant complex and drastic restrictions as to registration and reporting.

"A very wide range of proprietary medicines find their chief outlet through drug stores, and being well known household remedies, are obtained without physicians' prescriptions. The sale of remedies of this class would almost entirely cease, as relatively few of their users would resort to them if a prescription were necessary. Very severe and, as we believe, unnecessary injury would be inflicted upon numerous manufacturers of proprietary medicines, in which class are to be found nearly all manufacturers of pharmaceutical products and many wholesale druggists.

"We believe that this bill should not become law and earnestly urge that it be disapproved by your committee."

REVENUE LAW OF 1918.

The authors of the new narcotic law declined coöperation with every branch of the drug trade. As a result, the terms are vague, ambiguous and in some instances contradictory. The Internal Revenue Bureau is actively at work in the promulgation of the provisions. However, the work involved will likely not permit them to issue the regulations until about May 1st. Dealers were instructed to register on or before March 25th and to render a complete inventory of narcotics; this was impossible in many instances, and it is stated that the collectors have been instructed to be lenient.

It may be that under a strict ruling of the law some dealers will be required to pay several registration taxes. The decision will be based on the interpretation of the following provisions of the law:

"Every person who sells or offers for sale any of said drugs in the original stamped packages" shall be deemed a wholesale dealer, and "Every person who sells or dispenses from original stamped packages" shall be deemed a retail dealer.

The same exemptions from the tax as provided in Section 6 of the Harrison Law are included in the new law, but a record of the sales must be kept in a manner prescribed by the Commissioner of Internal Revenue, and until these instructions have been given a record of all sales since February 25th must be made. Wholesalers and retailers will not be required to stamp stocks of goods on hand, but manufacturers must stamp all the goods

they sell hereafter. A confusion is liable to arise as the result of stamped and unstamped goods, but no authority has been found in the law for requiring the stamping of such stocks.

A provision of the law has been freely discussed, but no decision has been reached at this writing, which provides that there shall be levied, assessed, collected and paid a tax at the rate of 1 cent per ounce on narcotics or preparations thereof. One construction would require that a tax of 1 cent be paid on every ounce of preparation,* and another that the tax be collected on the amount of narcotic contained.

It is possible that under a rendition of the law the same goods may be taxed a number of times, first as the original package, then as sold by wholesalers, and again when sold at retail.

Deputy Commissioner B. C. Keith has ruled that when beef, wine and iron is sold that has been made in conformity with the National Formulary it need not bear the label indicating that it is made with non-beverage alcohol, as required for elixirs, etc., that are largely used as vehicles.

WILLARD HUNTINGDON WRIGHT SAYS DRUG ADDICTS NEED MEDICAL ATTENTION NOT MORAL INSTRUCTION.

Our attitude toward the victim of the drug-habit is still strongly modified by what Willard Huntingdon Wright calls "literary superstition." In an article contributed to *The Medical Review of Reviews*, Mr. Wright accuses even the medical profession of being actuated, in their treatment of those addicted to narcotics, by both "puritanism and imaginative literature."

Drug addiction is a disease, he states, and continues further, "that the fact of being self-imposed does not alter its status any more than self-imposed indigestion changes the character of dyspepsia. And until doctors so regard it there will be little success in its treatment. Just so long as the drug habit is approached socially or morally, just so long will it evade being conquered.

"A wholly impersonal and scientific attitude is indeed difficult under the present circumstances, and I do not wish these remarks to be considered as malignantly critical of those men who are now working along this line. They are confronted by many obstacles and difficulties—by public opinion, by apathy in the very profession to which they should look for assistance, by generations of false conceptions, by a miasma of unreasoning puritanism which tends to obscure the unsentimental truth, by hasty and ex-cathedra legislation, by a colossal mass of literary superstitions, and by the contradicting and deceiving evidence which the subject itself presents."

The author regards the "tapering-off" method as the logical one for the cure of the habit, and he devotes several pages to his reasons for such conviction. He says here, among other things:

"It is essential in the treatment and cure of narcotic drug addicts that there should exist a conscientious and earnest desire to be free of the drug; and this desire can be and often is created in the patient by giving him a clear understanding of the fatal effects upon his body by his continuing to use the drug, and also by impressing upon him the fact that a cure is not painful. The average drug addict shrinks from a cure because of the suffering he imagines to be connected with it, and which actually does accompany it when the physician is ignorant of the proper methods."

INDIANA HAS A PREREQUISITE LAW.

Indiana is now among the states having a prerequisite law. In a letter Prof. C. B. Jordan, who has been active in bringing about this legislation, states that Section 4 was a compromise. The amendment was introduced and for Indiana pharmacists to oppose it might have brought about a defeat of the bill. A reading of the Section referred to does not indicate that many will avail themselves of its provision. The law reads:

Section 1. Be it enacted by the General Assembly of the State of Indiana, that on and after the first day of January, 1920, no person shall be eligible to take the examination to become a registered pharmacist until such person shall have produced and filed such evidence as is satisfactory to the board of pharmacy that he has graduated from a school of pharmacy of good standing, as herein provided.

* Since this writing the decision has been reached to tax the volume of preparation containing the narcotic.

Section 2. A school of pharmacy in good standing as provided for in this act is hereby defined as one that meets the following requirements:

1. No school of pharmacy shall be considered in good standing unless the students on entering such schools are required to present evidence of the satisfactory completion of two (2) full years' work in a commissioned high school, or its equivalent, to be determined to the satisfaction of the Indiana Board of Pharmacy.

2. The instruction in a school of pharmacy of good standing shall cover a period of not less than fifty weeks (50), occupying two (2) school years, and at least two (2) months shall elapse between these school years. Each school year shall cover at least two hundred fifty (250) hours of class room instruction and three hundred fifty (350) hours of laboratory practice, which shall include the work outlined in the latest edition of the Pharmaceutical Syllabus.

Section 3.—This act shall not apply to any person who is a registered assistant pharmacist or a registered apprentice pharmacist at the time that this bill shall become a law.

Section 4. Nothing in this act shall be construed to prevent persons from selling and compounding drugs who have been in continuous employment as unregistered assistant pharmacists, unregistered prescription clerks, or as owners of drug stores actively and continuously engaged as such, for ten years continuously, prior to July 1, 1919, and whose stores have been continuously located in a city, or town, or village of less than three thousand inhabitants for ten years prior to July 1, 1919, who have complied with the following requirements: Under such circumstances such clerks or owners shall certify before July 1, 1919, such facts to the State Board of Pharmacy and upon application the State Board of Pharmacy may, at its discretion, issue a permit for a fee of twenty-five dollars ($25.00), which permit shall be renewed on the first day of July every second year from date thereof upon the payment of two dollars ($2.00) for each renewal to such unregistered applicant as above mentioned to continue in such business. Provided that no permit shall be granted to any such person who may have been convicted during such period of any crime or unlawful act.

Section 5. If any provisions or section of this act shall be held void or unconstitutional, all other provisions and all other sections of the act, which are not expressly held to be void or unconstitutional, shall continue in full force and effect.

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